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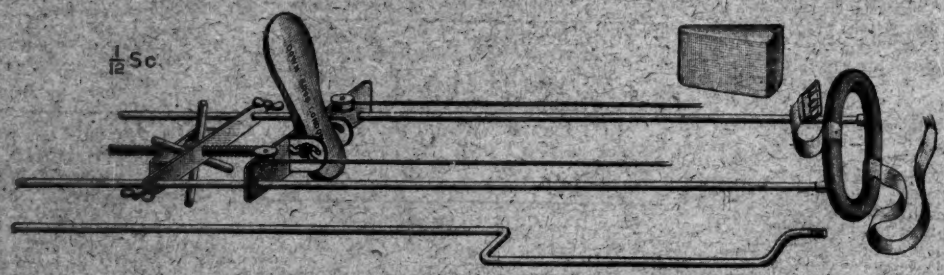

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Remarks
ON
"PYREXIA" OR "TRENCH FEVER."

BASED UPON TWELVE MONTHS' EXPERIENCE WITH A FIELD AMBULANCE.

BY JOHN MUIR, B.Sc., M.B., Ch.B.Glasg.,
CAPTAIN, R.A.M.C.(T.).

MUCH has yet to be ascertained regarding the nature, cause, and means of spread of the numerous cases of short fever—as yet undefined, therefore unnamed—which have occurred and are occurring, amongst the troops on our Franco-Belgian front. Until more is known about the cause of the disease the question of its nomenclature had better be left in abeyance, but already several names have been applied despite our ignorance regarding many points concerning the disease. This may at first seem a very trivial matter, but a hastily-accepted "label" may seriously prejudice the consideration and study of later cases.

It is unnecessary to go into detailed description of the cases to which I refer, since that has been done recently in a most interesting and valuable contribution to the subject by Captain J. W. McNee and others in the BRITISH MEDICAL JOURNAL of February 12th, 1916. In so far as their conclusions are based solely on observation of cases admitted to a casualty clearing station, there will be found later in these notes some criticism of their views and difference from their opinions, since a large percentage of the cases which occur never reach a casualty clearing station.

The object of publishing the present notes is to put on record the special experience gained regarding those cases as seen in a field ambulance, and to register some deductions from the incidence of the disease in a division during twelve months of active service in the north of France.

In the ambulance concerned we have commonly classed the cases as "pyrexia," either unqualified or "of uncertain origin" (P.U.O.). We were quite aware that we thereby laid ourselves open to the charge of the old army days that "to make a diagnosis of pyrexia is a confession of ignorance"; indeed, that is largely why we make it.

The symptoms met with in practically all the cases are precisely those classically grouped as a definition of "pyrexia" from any cause, and nothing more. There is the general feeling of lassitude, headache, pains in back and limbs, flushed face, coated tongue, and, later, free perspiration; there is loss of appetite with constipation, at times very obstinate; pains are commonly most severe behind the eyes and in back of head and neck; the somewhat characteristic "shin pains" generally occur later; there is usually slight congestion of the pharynx, but little or no discomfort from it.

At one time—in August, 1915—a considerable number of cases developed severe urticaria, but this was probably an accidental coincidence. Absence of complications or sequelae other than atonic muscle (heart and other) has been a striking feature throughout.

Thus the symptoms are those of "pyrexia," and so far no other diagnostic, much less pathognomonic, feature has been pointed out.

The diagnosis or "label" is admittedly provisional and has at least the merit of being non-committal.

Before any case is thus classified as "pyrexia" or "P.U.O." careful search must of course be made for other signs or symptoms that may be present. If such are found and still no definite diagnosis be arrived at, the case would rightly be classed as "N.Y.D." (not yet diagnosed), or a provisional diagnosis made and qualified by an interrogation. To class any case as "pyrexia" without any such attempt at definite diagnosis, or in presence of additional signs or symptoms, is quite unjustifiable.

A certain percentage of error is unavoidable and must be allowed for in estimating total number of cases, such errors arising from hurried "labelling" or from the appearance of diagnostic symptoms after the case has left the field ambulance. So far as we have been able to ascertain such percentage of error is a very small one.

In the present notes no deduction is made from the total number of cases, but much stress is laid on the incidence of the cases relative to other factors affecting the troops. The import of the numbers being thus proportional, the deductions drawn are unaffected by a possible percentage error common to the series.

At first, before we became familiar with those cases, the majority came to us labelled "influenza," on account of their superficial similarity to some cases of that heterogeneous group previously met with in civil practice, and commonly, though very loosely, spoken of as "influenza." Some medical officers in charge of units still send in the cases so labelled, and a few advocate retention of the name.

Such nomenclature is, however, worse than "confession of ignorance": it expresses a bald error in diagnosis, for there are marked, if not very obvious, distinctions between these cases and true cases of influenza—a classical entity.

The two principal features differentiating the cases from influenza are (1) the absence of any symptoms of catarrh in the respiratory tract (or elsewhere), and (2)—probably allied to (1)—the absence of all complications such as so commonly follow attacks of influenza. In the early months of 1916 many cases came in with catarrhal symptoms in nasopharynx and bronchi, but those symptoms were, in practically all cases, pre-existent and the "pyrexia" was superimposed—a point to be remembered in considering the etiology of the disease.

In the article already referred to Captain McNee describes "two clinical types of the disease: (*a*) A short fever of about a week's duration, followed frequently after a few days by a short single relapse; (*b*) a longer illness, characterized above all by the number sharpness, and periodicity of the relapses."

Of the latter ("long") type we have, owing to our circumstances, practically no experience. In a very few cases relapses occurred while with the field ambulance or after return to duty, but on this occurring those cases were at once evacuated to a casualty clearing station, so that we had no opportunity to observe them further. Such relapses in cases treated with ordinary care have been extremely rare; although, as noted later, a relapse is readily provoked during several days immediately following the return of the patient's temperature to normal.

On the whole the cases treated to a conclusion in the field ambulance are of shorter total duration than cases of the "short" type as described by McNee. The range of temperature is commonly lower. McNee says "the fever varies in intensity, ranging up to 103° F. or 104° F. in the first day or two." Such a high range of temperature is altogether exceptional in our cases, 102° F. being the maximum in the vast majority of cases and 101° F. in a large proportion.

Both of these differences are probably due to the fact that the cases reach the field ambulance at an earlier stage and are saved the disturbance of the further transport to the casualty clearing station. A field ambulance in ordinary circumstances must maintain its mobility, and the retention or evacuation of a case is decided according to the prospect of an early or delayed recovery and return to duty. In certain circumstances of stress, existing or anticipated, all cases of sickness are evacuated at the earliest opportunity; but when circumstances allow an option, the milder cases likely to recover more quickly are retained with the ambulance, while cases threatening to be of longer duration are evacuated to the casualty clearing station without delay. Conversely, the casualty clearing station, unless in times of stress, will receive few of those milder and shorter cases.

At times, as when the division is in rest, all cases so far as possible are treated to a conclusion in the field ambulance; only specially prolonged cases or cases with serious relapse being evacuated. It is thus evident that experience at a casualty clearing station does not by any means embrace all the cases that occur.

As regards the course of the disease in any given case, much depends upon how soon the patient comes under treatment—that is, how soon he is admitted to a place where he can rest in comparative comfort. The longer a man is going about after his temperature has risen above 99° F. the longer will be the duration of his fever after treatment begins; and any disturbance during the early

days of his illness, or within the first few days after his temperature has become normal, will cause marked exacerbation or relapse of his temperature and accompanying symptoms.

This feature, common in a degree to most illnesses, is strikingly marked in this disease, and should be remembered when considering later the factor of fatigue in relation to the incidence.

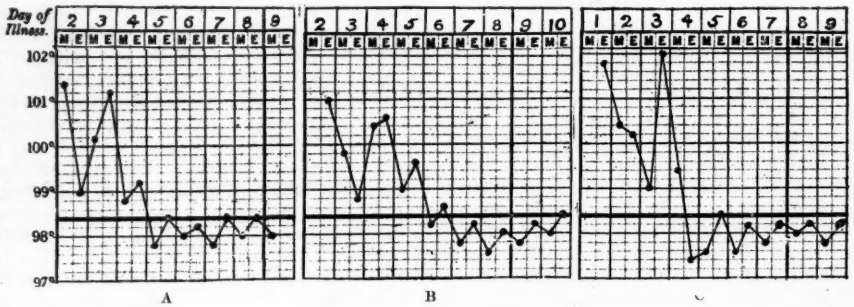

CHART 1.

McNee's suggestion that "the duration of the malady with its relapses may be inversely proportional to the severity and duration of the initial attack" is not borne out by experience of cases treated in the field ambulance. Amongst the "short" cases so treated without disturbance the probable duration of the attack may safely be estimated as directly proportional to the severity of the initial attack. This, of course, is not the whole question raised by McNee, but, so far as has been noted, relapses are not more common in cases with shorter and less severe initial attacks. The evidence on such a point is, however,

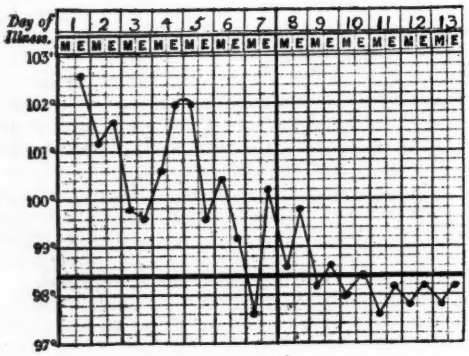

CHART 2.

admittedly incomplete, owing to considerations already stated, and it is with hesitation that even the above negative statements are made.

Charts 1 A, 1 B, and 1 C show typical cases as treated in a field ambulance: A and B are from cases admitted in early stages from infantry battalions; C from field ambulance personnel, therefore from first onset. The characteristic remission of temperature is shown on the third and fourth day, after which the temperature rapidly falls to normal again. After two normal evening temperatures such cases are usually allowed up for a little, in more severe cases proportionately later. For several days the temperature is registered morning and evening while the patient is allowed progressively more liberty, and usually about seven or eight days after admission the patient is transferred as convalescent or discharged to "light duty" if the circumstances of his unit are such as to render that possible in more than name.

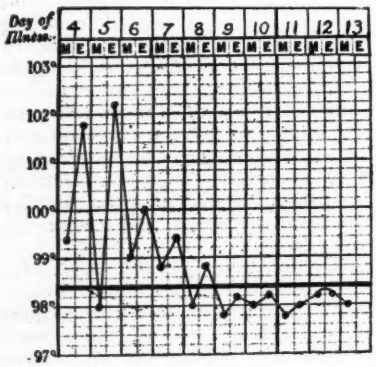

CHART 3.

Chart 2 is from a more severe case in a R.A.M.C. orderly—registered from the first day of illness.

Chart 3 is from the case of an infantry private admitted later in the course of the disease (fourth day of illness). The period of pyrexia is lengthened, and in such cases a longer convalescence is necessary before return to duty.

As already explained, owing to circumstances of local military significance affecting the mobility or capacity of the field ambulance, many mild cases have to be evacuated sooner or later to a casualty clearing station, where they constitute the "short" type, described as occurring there, along with a smaller number occurring amongst the R.A.M.C. personnel. The point to be remembered in comparing the type of cases seen in the two places is that the additional movement of the case, even in the comparative luxury of a modern motor ambulance, affects the course of the illness, directly aggravating the temperature and symptoms, and prolonging the total duration of the case. This doubtless accounts for the discrepancy of experience mentioned above.

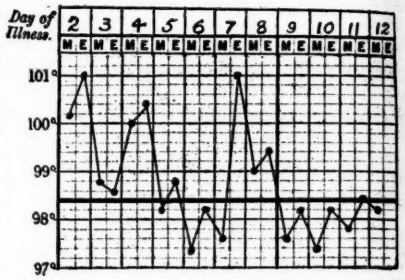

CHART 4.

Chart 4 shows the effect on the temperature chart of a patient moved with the field ambulance within two days of his temperature falling to normal after the typical remission. This is a common experience, and, to avoid it, such patients are preferably handed over for a few days to the relieving field ambulance.

Chart 5 shows a relapse due to the patient injudiciously, and owing to a misunderstanding, taking a bath too soon. This is no isolated case, but a typical result of too early exertion on the part of the patient.

Treatment.

Treatment mainly consists of rest and attention to the bowels, which are almost invariably constipated, sometimes obstinately so. Phenacetin, phenazonum, sod. sal., and acid. acet. sal. have been used to relieve pains in the head and limbs, and at times they have proved helpful in varying degree and order of preference. For the later shin pains, most troublesome at times, 10 grains acet. sal. at bedtime, and repeated if necessary two hours later, has proved a useful measure in most cases.

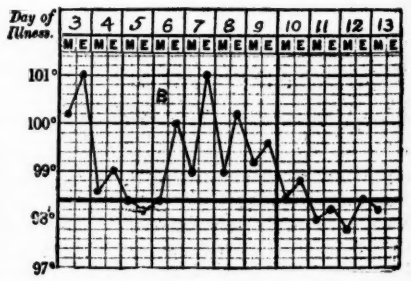

CHART 5.—B, Bath at 2 p.m.

In cases seen at, or very soon after, the onset of illness the period of pyrexia has frequently been cut short and the patient's discomfort diminished by the administration of two powders, each consisting of morphine acetate gr. $\frac{1}{30}$, caffeine citrate gr. j, phenacetin gr. 8; one given immediately the patient gets to bed and the second two hours later.

This is admittedly mere symptomatic treatment and not reliable in every case, but its effect has been observed over several series of cases with parallel series of control

cases not so treated, and the beneficial effect is beyond dispute.

Charts 6 A and 6 B show the effect of this treatment on

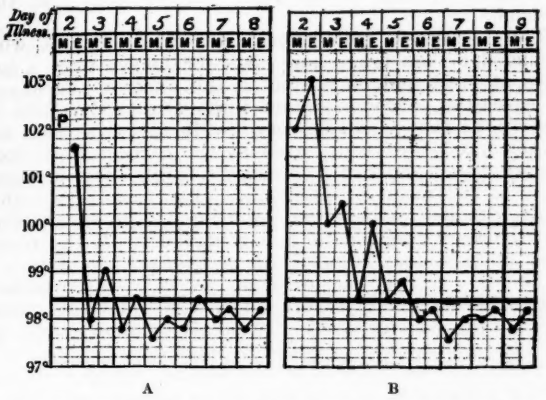

Chart 6.—P, Powders containing morphine acetate, caffeine citrate, and phenacetin administered.

the temperature. In 6 A, from a comparatively mild case, the typical remission is not apparent, although the case was otherwise true to type; in 6 B, from a more severe case, the remission is slight and the after-course accelerated.

The patients themselves were in no doubt as to the beneficial effect of the treatment—evidence worthy of some consideration when so little can otherwise be done to relieve the patients' discomfort.

Prophylaxis.

It is astonishing to realize the total number of days of unfitness that have been caused during twelve months in one division by this comparatively mild disease, and prevention of even part of this would repay much time and labour. In the army it ought to be the first duty and aim of all the medical service to "keep the men fit." Towards that end the observations here recorded have been focussed while striving to get a clearer understanding of the disease and particularly of its etiology.

As a possible step towards elucidation a record has been kept of the incidence of the disease in the personnel of a division during a period of twelve months—March, 1915, to March, 1916.

By analysis of the "Admission-and-Discharge" books of each of the three field ambulances of the division the total number admitted from the division as suffering from the disease during each week of the above period has been obtained. From these figures a chart or graph has been constructed (Fig. 7). Its main interest appears when it is considered in relation to the disposition and occupation of the troops of the division at different periods.

For the first two months of the twelve under consideration there was a relatively low incidence of the disease, even if allowance be made for a percentage of cases escaping true classification. During that time the division was variously employed—in sections undergoing instruction, in reserve, or taking part in several so-called "small shows"; but it was not until June that the division was kept as a whole in the trenches for any length of time.

After those early months, however, on looking at the completed graph one's attention is arrested by the successive maxima of incidence occurring in July–August, October–November, and January–February, with the marked intervening minima.

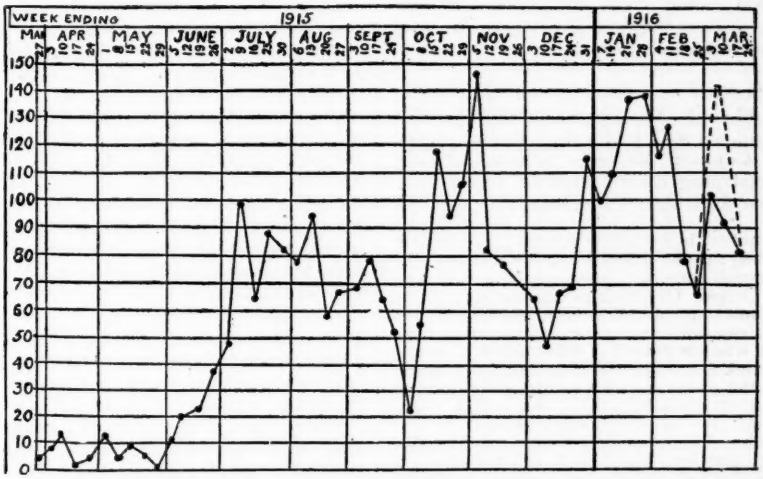

Chart 7.—Weekly numbers of cases of "pyrexia" admitted to the three field ambulances of a division for a period of twelve months.

The first climax is not so marked; this is to be accounted for by the fact that periods of stress and rest were not at that time so clearly defined and separate. Despite that modification, however, this early and protracted maximum agrees in its features with the two later which are sufficiently striking in character.

Each of these maxima of incidence is found to correspond to the later days of a prolonged and trying spell in the trenches. The division in each case had been depleted in numbers by casualties during the earlier weeks of the spell, and increasing strain was thus thrown on the remaining effectives, who became progressively more fatigued as the time passed.

The marked and rapid decrease in incidence which succeeds each maximum corresponds to the withdrawal of the division into "Corps Rest Area," an area occupied by troops during such time as they are withdrawn from the trenches. During that term the men were placed in comparatively comfortable billets; and though they were not exactly allowed to remain idle, they were removed from the constant strain and exposure of the further advanced positions.

There is no evidence whatever of the influence of any special type of weather conditions on the incidence. During the period leading up to the first maximum, the weather was very hot, dry, and dusty; during the second period rain fell almost daily, usually in torrents; during the third period it was wet and cold in the earlier weeks and later dry and frosty. Severe weather of any kind would have some influence by increasing the effects of the exposure to which men were subjected, but only thus indirectly. The only factors common to the three periods were the extreme strain and exposure in the trenches or of other activities necessarily associated with "holding the line."

At first sight this might seem to justify the term "trench fever" as applied to the disease in question, but from later notes the fallacy of this assumption will be realized.

The incidence in the last period of "Corps Rest," in February–March, 1916, is most interesting in this connexion. During that period the first week "in rest" shows the expected drop in the curve, but this is not maintained, and the appearance of the unexpected rise is explained by the following circumstance.

After the first week a scheme of "Brigade training" was entered upon, and each brigade went in turn for a week to a training area where a strenuous course of manœuvres was carried through. This involved heavy marching and other special exertion on the part of officers and men, and this work was carried out in very severe weather, with frequent—almost daily—snowstorms.

The combined graph shows for the division during this period an increased incidence as compared with former periods of "rest," but the increase is really greater than the graph makes evident, for each brigade was affected separately and successively; thus the increase due to the

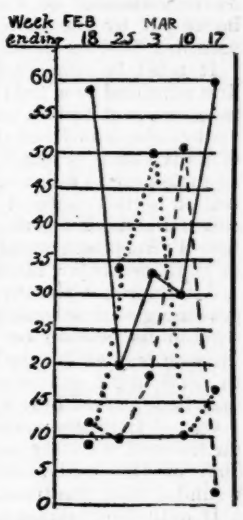

Chart 8.—Number of cases for each brigade separately during week of "training."

one cause acting in each case for a week is shown spread over three weeks. Each brigade having had one ambulance attached to it for the period of rest, it is possible to record the incidence for each brigade separately, as in Fig. 8. Each brigade shows a distinct maximum of incidence whilst it was under the strenuous training.

From former periods of "rest" a normal average incidence may be assumed; a third of this number will represent the average for each brigade. If for the period in question the excess of actual incidence in each brigade over this average be calculated and the three excesses be combined, a figure will be obtained which would represent the excess of incidence over the average for the division had the three brigades been affected simultaneously.

This estimated maximum is shown in broken line on the larger graph (Fig. 7), and shows in true proportion the effect on incidence of the conditions under which the troops were at the time.

The billets had not been occupied by troops recently, so that endemic infection was very improbable.

The increased incidence corresponds exactly to that observed when the division was "in the trenches," and yet the men were completely away from the trench area. The conditions common to the two situations were those of extra exertion and exposure, jointly productive of fatigue, but most of the special conditions of trench life were absent from the training area.

This demonstrates the fallacy of applying to the disease the term "trench fever." The term would imply that the disease depended upon some virus indigenous to the trenches, and that the disease was endemic there, or that it depended upon conditions inherent to the trenches and limited to that area.

The term thus expresses a generalization that is far from absolutely true and suggests a limitation of incidence that is very misleading, as will be further shown in the following notes. In Captain McNee's article, already quoted, it is stated regarding distribution of the disease, that from casualty clearing station experience:

> The cases have been met with, curiously enough, only among two classes of men, namely, those direct from the trenches, or at least from near the trench zone (artillerymen, etc.), and men of Royal Army Medical Corps. On looking into our records no real exception can be found to the above generalization. Thus, in our experience, only those who have actually lived in or near the trenches, and those who by reason of their work are constantly in contact with sick and wounded men from the firing line, have suffered from the disease. This seems important in searching for the means of transmission of the malady, and shows, at any rate, that the name "trench fever" is not without some justification. No case has been met in units such as ammunition columns, ordnance, head quarters troops, etc., which, although in the army area, are situated at some distance from the lines.

Unfortunately for the inferences drawn, the experience upon which they are based is an incomplete one, and the above statement of the limitation of the disease is not borne out by the more inclusive experience of cases as seen in a field ambulance.

It must be remembered that practically all cases are first admitted to a field ambulance, but that not all such cases are sent on to a casualty clearing station. From the "Admission-and-Discharge" books of the field ambulances of a division it is found that only 55 per cent. of the cases admitted are so evacuated. The experience in the clearing station is thus confined to a percentage only of the total cases, making it a somewhat risky datum upon which to base a sweeping generalization, and the selection of cases as explained below makes it more than risky.

Attention has already been drawn to the circumstances governing such selection, but repetition may be excused to explain its bearing on the point in question. Whilst a division is in action the field ambulances are situated so as to serve most conveniently all the various troops which may be scattered over a somewhat large area.

One of the three ambulances (possibly two) is placed as far forward as safety and convenience allow, the primary duty of this ambulance being to receive and deal with wounded from the trenches and other advanced positions.

If only one ambulance be "up," a second is placed conveniently to receive and treat sick from the various units of the division. If two ambulances be "up," each will receive its share of sick as well as wounded.

The third ambulance is held "in reserve"—more or less literally according to circumstances, but normally it will be "open," at least partially, to receive sick transferred from the more advanced ambulances, and direct from units situated further behind the firing line—in the area sometimes spoken of as the "reserve area" of the division.

The advanced ambulances, concerned mainly with wounded, do not retain any cases for longer than a few days at most, and, on account of the uncertain incidence of casualties, accommodation must always be held in reserve, so that as a rule very few, if any, sick cases are retained, but are transferred at the earliest convenient opportunity, usually to a casualty clearing station or possibly to the reserve ambulance. The remaining ambulance, situated further from the firing line, is, on the other hand, mainly designed for and concerned with the reception of sick, and receives its cases from units in the "reserve area" of the division, precisely those units—"ammunition columns, ordnance, head quarters troops, etc."—from which the casualty clearing station is reported to receive no cases of so-called "trench fever."

From such units cases of the disease under consideration are admitted in numbers by no means negligible in comparison with the strength of the units concerned, though the proportional incidence is probably lower than in units situated further forward in what may from this point of view be termed the more strenuous area.

On account of the situation and correspondingly more elastic accommodation of this reserve ambulance, there is not the same necessity for immediate or wholesale evacuation, and consequently a large number of the cases received are retained and treated till fit for discharge to a convalescent rest station or to light duty. The cases received from the nearer units—those of the "reserve area"—are, further, the most likely to be retained, since such cases are, as a rule, proportionately milder on account of earlier admission and the shorter and less fatiguing transport necessary to reach the field ambulance. That a casualty clearing station receives very few cases from those units in the "reserve area" is explained by the above circumstances, although it seems hardly possible that many such units are in a position to state that "no cases have been met with."

The fallacy of the quoted generalization is obvious, and this takes away all strength from the suggested plea of justification for the term "trench fever." The term has inherent drawbacks, and its use seems, on the whole, inadvisable, despite its convenience.

To venture a short way towards hypothesis, it may be said that the disease would seem to be due to some infecting agent ubiquitous in its distribution, and most probably borne on or in the human person (naso-pharynx?), the determining factor of incidence being the condition of the individual as affecting his power of resistance.

Hence towards the end of a long spell in the trenches, with its inevitable fatigue and exposure, the men individually and collectively tend towards a condition favourable to the onset of the disease. The factor of defence is the deciding factor, not so much that of attack. Such effect is cumulative, for as earlier cases are evacuated greater strain is thrown on the men remaining, and the incidence rises to a climax, as well shown in the graph in Fig. 7.

This cumulative effect is increased further by the fact that, as in similar cases, the virulence of the virus becomes accentuated by its success, and contagion becomes more probable and widespread so long as the other conditions remain unchanged.

Change of those external conditions by removal of the men to a less exacting and more comfortable environment is at once followed by a marked decrease in the incidence of the disease.

Where cases are aggregated, as in the wards of a medical unit, the contagion is correspondingly concentrated; hence the cases amongst R.A.M.C. personnel, and also accidentally at times amongst patients admitted for other ailments.

At first sight this high incidence in the trenches and decrease on withdrawal of the men from the trenches might seem to justify the name of "trench fever," but as pointed out, the disease undoubtedly occurs amongst men who are practically never in the trenches, and the increased

incidence may appear under suitable conditions far removed from the trench area.

As to conveyance of the disease there is much to suggest, and nothing to contraindicate, direct contagion from man to man, the most probable route being nasopharyngeal, although no direct positive evidence of this has as yet been produced.

Flies or parasites may convey the infection, and lice have been specifically blamed, or rather suspected, by many competent observers. Much experimental work, however, of a far-reaching and exhaustive nature has yet failed to produce positive evidence of conveyance by any of these means.

As regards lice, these pests are unfortunately so ubiquitous among the troops that it is difficult to settle the question by direct observation. In a small percentage of cases the absence of lice was practically certain, so that unless, and until, positive evidence be produced of the conveyance of the disease by this means it is certainly most inadvisable to employ a term, such as "lice fever," which, to say the least, definitely assumes an uncertainty.

If a temporary name were necessary for the disease, the term "fatigue fever" might fit the facts so far as known, but as that term was employed by Sir William Aitken many years ago it might be misleading.

In corroboration of this suggestion it is of great interest to quote a report recently submitted by the medical officer of a battalion in a division separate in its activities from the division in which was gained the experience upon which the foregoing remarks are based. The report was drawn up on a request to explain the excessive incidence of sickness in the battalion towards the end of a long spell in the trenches. Among other points of minor interest the R.M.O. reports:

(*a*) Chief ailments—Fever N.Y.D. (not yet diagnosed), 75 per cent.

(*b*) In my opinion excessive incidence is due entirely to overwork, excessive strain and exposure, and lack of rest.

At times such excessive strain, exposure, etc., is doubtless inevitable, and at such times the excessive incidence of this disease may be the necessary price to be paid under present conditions of warfare. It is well, however, that the fact should be recognized even though it may remove possible prophylactic measures from the immediate sphere of the medical services.

Conclusions.

There is little to summarize in the foregoing remarks, as they are discursive in nature, and distinctly contributory in intention rather than conclusive; but attention may be focussed on the following points:

1. The nature and mode of conveyance of the infective agent producing the numerous cases of "short fever" met with in our troops are still unknown, and merit further observation and research.

2. The term "trench fever" is distinctly misleading, and is not justified by analysis of the total number of cases which occur in the various units of a division and under varying conditions. Cases occur in considerable numbers in units situated outside the "trench area," and markedly increased incidence is met under suitable conditions whilst the troops are far removed from the trenches.

3. Such inclusive experience can only be gained in a field ambulance, as all cases are primarily brought there, and many (about 45 per cent.) are not transferred to any other medical unit.

4. The name "lice fever" is also objectionable, since it assumes as a fact a possible means of conveyance which at present is merely a hypothesis.

5. The infective agent is probably a widespread virus borne on the persons of men concerned (nasopharyngeal?) normally of low virulence.

6. Incidence of the disease depends upon the condition of the men, whose defence against the infection is specially lowered by exposure and fatigue.

Thanks are due for facilities and assistance in compiling the above notes to Colonel Ferguson, D.S.O., A.M.S., and to Lieutenant-Colonel Jerman, Lieutenant-Colonel Dawson, and Major Rutherford, R.A.M.C.T.

This does not imply their acquiescence in the views expressed, which, in any case, are entirely tentative.

The writer is keenly aware of the incompleteness of the observations, but is prevented by an unfortunate accident from pursuing them further. In the hope, however, of stimulating discussion, however adverse, the notes are published.

A CASE OF ACUTE MYELOBLASTIC LEUKAEMIA.

BY

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The following case of acute myeloblastic leukaemia presents some points of interest.

A naval officer aged 40 came under my care on August 9th with the following history. As a child he had been delicate. Some years ago after joining the service he had malaria, and in 1913, whilst living in South Africa, had haematuria. He rejoined the service at the outbreak of war, and had fair but not robust health until the onset of the illness which was the cause of death. Towards the end of July, 1916, he consulted his dentist about a tooth which was troubling him, and on July 28th the tooth was extracted and some pus was evacuated from the socket. There was no excess of haemorrhage from the socket, but the same day diarrhoea commenced with motions every three or four hours, the stools being very offensive, and containing at first bright red blood, and later blood of a dark brown colour. The diarrhoea, though later not so urgent, continued until August 8th. On August 6th vomiting set in, and lasted until August 8th. When first seen by me, on August 9th, the patient was very weak and markedly anaemic. There was nothing of note in the condition of the heart, lungs, or nervous system. The abdomen was much distended, but there was no tenderness. The liver extended 5 in. below the costal margin in the right nipple line, and the spleen could be felt 1 in. below the costal margin at the end of inspiration. The teeth had many gold crowns, the gums were clean but pale. The urine was acid, specific gravity 1014, and contained a trace of albumin, but no sugar, albumoses, casts, cells, or blood. The glands in the right posterior triangle of the neck were about the size of haricot beans. Those in the left posterior triangle, in the groins, and in the axilla were just palpable. There were no swellings about the long bones, nor was there any tenderness on percussion. Examination of the blood gave the following results:

Red cells, per c.mm.	1,670,000	
White cells, per c.mm.	431,000	
Haemoglobin	40	per cent.
Colour index	1.1	
Differential count of 500 leucocytes:		
Polymorphonuc'ears	2.2	per cent.
Small lymphocytes	1.8	,,
Large lymphocytes	0.6	,,
Eosinophile myelocytes	0.4	,,
Myelobasts	95	,,

The red cells showed little alteration in size or shape. A few nucleated reds, a few Riedel cells, but no mast cells, could be seen. The cells which I have designated myeloblasts were large mononuclear cells with a purple-staining nucleus (Leishman), the structure of which was loose, many containing two or three nucleoli. The cytoplasm stained blue, and was distinctly granular.

No vomiting or diarrhoea occurred after the patient came under my observation, and a normal-looking stool was passed after the administration of an aperient. The temperature varied between 99.2° and 102° F. from August 9th until death. Considerable oozing into the subcutaneous tissues followed a hypodermic injection.

At 9.30 p.m. on August 12th epistaxis commenced, and lasted until 10.15 p.m. About midnight the patient gradually became unconscious, the breathing became stertorous, the epistaxis recurred, and at 2.15 a.m. on August 13th he died.

Post-mortem Examination.

Lungs.—Both were united by thin filmy adhesions over the whole of their external surfaces to the surrounding structures. On section they were pale in colour, but otherwise apparently normal.

The *thymus* was atrophied.

Heart.—Was slightly enlarged. Beneath the serous covering of the heart, especially over the ventricles, were multiple plum-coloured petechial haemorrhages. On opening the cavities much pale-coloured clot was found. Beneath the endocardial covering of the walls of the ventricles were many small haemorrhages, more especially in the right ventricle. The muscle was paler than usual. The valves and aorta were normal.

Liver.—Was united by filmy adhesions to the anterior abdominal wall and diaphragm. Weight 90 oz. On macroscopic section it was somewhat pale and had a slight nutmeg appearance.

Spleen.—Weighed 13½ oz. It was united by filmy adhesions to surrounding structures, and on the convex surface was an area 3 in. in diameter of marked perisplenitis uniting the spleen to the diaphragm. On section the Malpighian bodies seemed unduly prominent.

Intestines.—The appendices epiploicae of the transverse colon were swollen and haemorrhagic. The mesentery contained many calcareous masses as large as small haricot beans. The lymphatic glands were not enlarged. The presacral haemolymph glands were enlarged.

Kidneys.—Weighed 7 oz. each. On section they were pale in colour and in the pyramidal portion of each kidney were two pale-green areas about the size of a large pea. The other abdominal organs were apparently normal.

Marrow.—The shaft of the tibia contained marrow of a pale yellow colour with complete absence of any red coloration; that in the head of the tibia was pale yellow. The marrow of the ribs and sternum was greyish-brown in colour.

Microscopic Examination.

Heart.—The spaces between the muscular bundles were infiltrated with leucocytes of the myeloblastic type.

Liver.—The periphery of the lobules was packed with cells with the appearance of myeloblasts. Much free brown-coloured pigment was present towards the periphery of the lobules.

Kidney.—A section through one of the pale-green areas mentioned above revealed a mass of cells resembling myeloblasts closely packed together, with atrophy of the uriniferous tubules. Other portions of the kidney were almost entirely free from blood cells.

Spleen.—The Malpighian bodies were apparently normal. In the pulp were many myeloblasts and much free brown pigment.

Marrow.—Smear. Almost all the cells were myeloblasts. No nucleated reds or polymorphonuclears could be seen.

Section (after hardening). The bulk of the cells seen were myeloblasts. A few eosinophile myelocytes, an occasional normoblast, and an occasional giant cell, but no polymorphonuclears, were to be seen. On attempting to stain a hardened section of the marrow from the shaft of the tibia the section almost completely dissolved in the xylol, leaving only amorphous débris.

In conclusion, I should like to express my best thanks to Deputy Surgeon-General H. W. G. Doyne, R.N., for his kind permission to publish the case, and to Staff Surgeon S. F. Dudley, R.N., for his ungrudging work in preparing the sections and much valuable advice.

GRAFTING WITH FROG SKIN.

BY

H. W. M. KENDALL, CAPTAIN R.A.M.C.(T.C.).

THE idea of grafting granulating surfaces with frog skin was put into practice by me as far back as 1886–7 in India, at Chunar, Bengal, where some of the men were affected by ulcer of the legs more or less indolent in character. I cannot say certainly now how I got the theory, but think it was suggested through some native source. At any rate, as frogs, ulcers, and time were plentifully at my disposal, I experimented, with satisfactory results to the patients, gratification to myself, and the least possible inconvenience and injury to the frogs. My reason for recalling the matter is that being quartered in France, where demand and supply of material are both abundant, I have been enabled to reapply the method with again the same gratifying results. The large number of open granulating wounds, caused chiefly by shrapnel, which are slow in healing and in which a contracting scar is likely to give possible inconvenience later on account of position, friction, etc., induced me to resort again to this method of grafting. During the past month I have collected fourteen cases as follows:

1. Sgt. W. S. Shrapnel wound, left thigh, July 14th, Contalmaison. Graft applied August 6th. Unsuccessful. This wound was suppurating profusely and the graft did not adhere. Another was applied August 17th; healed August 30th.

2. Pte. A. G. Shrapnel wound, right thigh, July 7th. Grafted August 27th; healed September 2nd.

3. Pte. H. J. Arm grafted August 5th; healed September 2nd.

4. Cpl. G. D. Shrapnel wound, left arm, July 15th. Grafted August 3rd; healed August 25th.

5. Pte. J. S. W. Shrapnel wound, right arm, July 24th, Beaumont Hamel. Grafted August 6th; healed August 17th.

6. Pte. W. B. Bullet wound, left upper arm, High Wood. Grafted August 3rd; healed August 19th.

7. Sgt. A. F. Bullet wound, right upper arm, July 18th, Longueval. Grafted August 3rd; healed August 20th.

8. Lce-cpl. F. R. Shrapnel wound, left arm, Thiepval Wood. Grafted August 3rd; healed September 2nd.

9. Gnr. E. S. Wounded by bomb, July 3rd, Aveluy. Grafted August 24th; healed September 2nd.

10. Pte. A. E. McD. Bullet wound across left breast, July 25th, at Pozières. Grafted August 26th; healed September 8th.

11. Pte. G. F. H. Bomb wound left buttock, July 20th, Armentières. Grafted August 24th; unsuccessful.

12. Pte. E. E. T. Shrapnel wound, back, July 25th, Ypres. Three grafts applied August 17th; healed August 30th.

13. Pte. A. T. M. Gunshot wound, back, July 25th, Festubert. Two grafts applied August 17th; healed August 30th.

14. Pte. R. I. S. Shrapnel wound, side, July 4th, Pozières. Three grafts applied August 26th; one successful, healing well at date.

The above wounds varied roughly from 1½ in. to 4 in. in length by ½ in. to 1½ in. in breadth. No. 1 was unsuccessful on account of the condition of the wound at the time of grafting, the profuse suppuration washing off the graft. In No. 11, the wound being on the buttock, dressings were difficult to keep in position, and in No. 14 two out of the three grafts failed to adhere for the same reason.

The ideal wound to graft is flat, without much suppuration or excessive protuberant granulations. The rapidity with which the wound commences to heal after the graft has successfully adhered is in marked contrast to its sluggishness before the operation.

The wound having been gently cleaned without antiseptics and as gently dried, the loose skin on the inner side of the frog's thigh is carefully pinched up in a pair of dressing forceps, snipped off with scissors, spread out and applied by its under surface to the wound. A strip of gutta-percha tissue smeared with some mild and soft non-irritating emollient is then placed over it, fixed in position at its ends by adhesive plaster, and a dry dressing applied over all. The whole is gently removed in three days, when the site of the graft will be noticed as a purplish spot branching outwards to the periphery of the wound. A similar dressing is again applied for two days to avoid unnecessary interference, after which the wound may be dressed daily, without the gutta-percha tissue, with some simple, non-irritating ointment, such as boracic, until healing is completed.

The gap in the skin's continuity is by this process filled up and unsightly or inconvenient contraction avoided.

I have tried frog skin grafting once only in this interval of thirty years, in New Zealand, after a radical mastoid operation, but have no knowledge of the ultimate result as the patient left, I believe, for her home in Germany shortly afterwards.

In addition to leaving a supple scar this method has the advantage of transplanting skin free of hair, and is free of diseases possibly conveyed in human skin. My reason for not using antiseptics is to avoid destroying the delicate epithelium formed from the graft in the same way that injudicious antisepsis may render a vaccination inert.

I think the method would prove useful in many kinds of slowly healing sores, varicose ulcers with or without a tendency to adhere to the bony tissues beneath, burns after the acute stages have passed, large abrasions or ulcerating surfaces on the face or exposed parts or in mastoid cavities where transplantation of skin is indicated.

THE USE OF GLYCERINE AND ICHTHYOL IN THE TREATMENT OF SEPTIC WOUNDS.

BY

MAJOR THOMAS W. A. DAMAN, R.A.M.C.(T.F.).

IN the case of some wounds more or less septic it does not seem to matter much what kind of dressing they receive. They will heal, and nothing, so to speak, in the way of wet or dry dressing will prevent their healing. Those in which the circulation has been originally extensively interfered with, or where extensive induration has taken place in consequence of sepsis and of the blocking of vessels, will not heal readily under the ordinary methods of dressing.

At the Military Hospital, Lincoln, under Major Duggan, remarkable and altogether surprising results are the rule, especially in cases of severe suppuration and sloughing accompanied by oedema and induration of the surrounding tissues. The immediate results are rapid reduction of swelling and induration, and almost instant easing and removal of pain. Rapid cessation of sepsis and of purulent discharge follows, accompanied by the quick formation of

healthy granulation tissue and equally quick production of a covering of skin, and, finally, complete healing by cicatricial tissue, the cicatrix invariably being a good one. It is, of course, taken for granted that any foreign body, such as dead bone, clothing, or piece of metal, has been removed, or is not present.

Continual irrigation with saline solution, as again suggested by some surgeons, I remember being used with success for extensive and severe forms of sepsis when I was attending hospital practice at Edinburgh. Boiled boracic and boiled saline solutions were then employed. This method I also followed when senior house-surgeon in the Lincoln County Hospital in cases of severe injury with much sepsis. It is a clean method, though possessing, one would imagine, only feeble osmotic action. Threads of woollen skein or lint formed the siphon. There is also the saline bath and boracic bath for arm or leg, which method is clumsy and gives very slow, painful, and uncertain results; hot moist dressings ease pain but make the tissues soft and boggy. These methods seem to me to fail to do the one thing necessary towards healing—that is, the calling up of a better blood supply to the injured surface, which can only occur after the barrier of induration is broken down.

A good blood supply brought to an injured part by an uninjured artery has its beneficial effect very much restricted if there is little or no chance of its being carried on to the seat of injury, as is the case when a more or less dense and impervious barrier exists, in which the smaller vessels, arterioles, capillaries, and venules are pressed upon by the swollen tissues and so occluded. It is evident that in such a state of affairs only a very sluggish supply of the healing serum, if any, can reach the injured surface, and repair, when taking place only from the proximal side of the barrier, must be a much slower process than when the aid of an osmotic action produced at the surface or distal side of that barrier is received coincidentally. The period of stagnation or stasis in the smaller vessels is shortened and the danger of the occurrence of more or less chronic fibroid changes is diminished, while the eventual cicatrization will take place more rapidly and with a reduced tendency to deep scarring and deformity.

The happiest results would appear likely to be attained if the osmotic action of a glycerine preparation could be set up at the earliest possible moment after the wound had been received, in order to prevent absorption of toxins and to destroy and throw off invading germs whose irritating presence gives rise to subsequent oedema and induration.

To prove how the absorption of toxins is lessened and prevented by this method one only has to watch the constitutional disturbance of the patient as evidenced by the temperature, which falls in from two to five days, unless there happens to be any pocket of pus present which has escaped observation, and when this has been set free the temperature never again rises.

It follows that Major Duggan's method of using glycerine immediately assists nature's healing process, attacking as it does the swollen indurated and septic tissues, from the wound surface, by means of a quickly established and free osmosis. This not only commences to break down the barrier from the distal surface, but at the same time greatly aids the natural evacuation of débris and prevents further sloughing and destruction of tissues.

Most of the usual modes of dressing fail entirely to do these things or lend only a feeble aid to nature, and some must even retard healing to a greater or less extent. Take, for instance, the action of some of the strong irritant and corrosive lotions sometimes employed—1 in 20 and 1 in 40 carbolic, corrosive sublimate, etc.—which by their destructive action may tend even to determine the death of portions of wounded tissues which apart from their action might have lived. This class of dressing has also to be changed frequently, and each dressing will destroy embryonic granulation tissue and newly-formed skin cells, however carefully it is removed. The more frequent the dressing the more local damage is done, and in addition to this the multiplication of painful dressings must cause increased suffering to the patient and so debilitate him, to say nothing of disturbing his hours of sleep.

The glycerine and ichthyol dressings need, at the most, be applied night and morning, and in many cases one dressing in the twenty-four hours is amply sufficient.

One more point is that osmosis ensures the calling up of a supply of blood serum to those tissues which need repair, which is good, but what is better, of a supply of an autogenous serum full of antibodies, which have been called into existence by the infecting germs themselves, and can be used in the annihilation of those germs.

To Edwart Hort we owe a great debt for his demonstrations of the healing effect of normal horse serum when applied to surface wounds and ulcers, as well as to ulcers of the stomach and duodenum. To Major Duggan we now owe a second debt, for he has demonstrated how by osmosis we can use the patient's own serum over the wound surface, and so obtain a rapid healing.

One of the best dressings now in use in some of the military hospitals is a solution in water of magnesium sulphate with the addition of glycerine. Magnesium sulphate would help osmosis, but the added water would appear to be likely to lessen the osmotic effect of the glycerine, and to this extent diminish its usefulness. This is a later method than Major Duggan's plan of treatment, and though an enormous stride in the right direction, and in every way superior to the usual methods employed, it lacks the intenser osmotic power of the pure glycerine, and in this way is inferior to the method which we are now considering.

Major Duggan uses a mixture of ichthyol and glycerine in varying strengths; and the results are satisfactory and the method well worthy of employment in every case of an open wound, accompanied by sepsis, induration, and pain.

MEMORANDUM ON TETANUS.

BY

THE WAR OFFICE COMMITTEE ON THE STUDY OF TETANUS.

THE following notes on the prophylaxis and treatment of tetanus have been compiled with the authority of the War Office Committee for the Study of Tetanus, and are to a great extent based on experimental and clinical evidence which has become available since the beginning of the present war.

The memorandum was first issued in August, 1916, but as a good many questions have been asked in regard to various points, it has been thought better to issue a revised edition.

The Prophylactic or Preventive Treatment of Tetanus.

The prophylactic value of injections of antitetanic serum is beyond all question, but there is strong experimental evidence that in about ten days the immunity conferred by the primary injection is to a great extent lost.

It is, therefore, the general opinion that a second subcutaneous injection should be given in all cases of septic wounds, and in order to anticipate the total disappearance of the antitoxin from the body the second injection should follow the first at an interval of seven days.

In cases of long-continued septic wounds, particularly those caused by shell or bomb, third and fourth injections at seven-day intervals are recommended.

It is self-evident that if it is considered necessary to give a second injection, then it is equally necessary to give a third or fourth or more prophylactic injections, as the passive immunity conferred by the antitetanic serum is of short duration.

It may be definitely stated here that the danger of anaphylactic shock is negligible when prophylactic doses of 500 U.S.A. units contained in 3 c.cm. of horse serum are given subcutaneously, whatever the interval after the preceding injection.

Dosage in Prophylactic or Preventive Treatment of Tetanus.

The primary injection should consist of 500 U.S.A. units, and the second and following injections should be, for the present, of the same amount.

The primary injection is given as a rule at a dressing station or field ambulance as soon as the wounded soldier is removed from the firing line. The second and following injections will most frequently be given at home hospitals. The ordinary phial usually contains 1,500 units of tetanus antitoxin. One-third of a phial should therefore be injected into each wounded man. There is no necessity to sterilize the syringe after each injection; the serum is aseptic, and moreover contains an antiseptic; it will be sufficient if a freshly sterilized needle is used for each case.

Precautions to be Taken Before Operating on Wounds.

When operations are performed at the site of wounds, even if they are healed, a prophylactic injection of serum

should invariably be given if the operation be performed at a greater interval than seven days from the last injection. Cases have occurred in which the performance of simple operations has been followed by an attack of tetanus, although in many cases the primary wound had been healed several weeks before the operation.

This precautionary injection may consist of a single subcutaneous injection of the ordinary prophylactic dose of 500 units, given when possible two days before the operation.

It is better to give it two days before the operation, as it takes some forty-eight hours for antitoxin to be fully absorbed after subcutaneous injection. Injected intramuscularly, the absorption is quicker—said to be about twelve hours—so that this method could be used if time were pressing.

Of course a larger dose than 500 units may be injected if thought advisable.

Antiseptics which may be of Use in the Preventive Treatment of Tetanus.

The group of oxidizing antiseptics, such as hydrogen peroxide, potassium permanganate, chlorine water, and solution of iodine, are particularly unfavourable to the anaërobic growth of the tetanus bacillus. They have the power of rendering toxin non-toxic.

Diagnosis.

The classical symptoms of tetanus as described in the majority of the textbooks refer to a phase of the disease when treatment has already lost much of its value. With many medical men, tetanus is not tetanus until the symptoms of risus sardonicus and lock-jaw are present.

In those who have been protected by prophylactic injection of antitoxin, trismus and general symptoms practically never occur, and the manifestations of tetanus are confined to local spastic rigidity of the wounded limb, which may persist for weeks.

The early diagnosis of tetanus is of the greatest importance. All clinical and experimental evidence tends to show that the chances of successful treatment diminish rapidly with the length of time after the first symptoms are observed.

Tetanus toxin reaches the motor nerve cells by travelling up the nerves. It is not directly conveyed to the central nervous system by the blood. In a large number of cases the toxin appears to reach the spinal cord primarily by the nerves which are in connexion with the seat of the injury, and hence the motor nerve cells governing the muscles round about the wound will be the earliest affected, such affection showing itself in the form of spasticity and increased reflex excitability of the muscles near the wound. In some cases these symptoms may precede other symptoms of tetanus by many hours. It is, therefore, desirable that the muscles in the vicinity of the wound should be examined whenever dressings are removed, and the occurrence of rigidity or twitchings, or local increased reflex response to gentle tapping or pressure, immediately reported to the surgeon in charge.

All nursing sisters engaged in dressing wounds, should be warned to give the alarm if the muscles round the wound are harder or more rigid than the muscles of the uninjured limb or side.

Other early symptoms of diagnostic importance may be anxious look, pain in back or neck, sore throat, general restlessness, unreasonable outbursts of temper, insomnia, violent headache, excessive yawning, complaints of spasm or stiffness in injured limb, stiff neck or difficulty in swallowing without recognizable cause, stitch in side, profuse local or general sweats, and difficulty in micturition.

It is very desirable to obtain the co-operation of medical officers in the endeavour of the Committee to formulate the early symptomatology of this disease, and to confirm or add to the above.

Any brief account of early symptoms noted both in the major and in the minor forms of the disease will be of great value, and officers are requested to forward any such observations to Surgeon-General Sir David Bruce, Chairman of the Tetanus Committee, at the Royal Army Medical College, Grosvenor Road, London, S.W.

Therapeutic or Curative Treatment of Tetanus.

It cannot be too strongly emphasized that time is the all-important element in the treatment of tetanus. As short a time as possible should be allowed to elapse between the diagnosis and the commencement of active treatment. A delay of an hour may make all the difference between success and failure.

It is on this account that the early symptoms are of the greatest importance. In almost every case of tetanus there are found local manifestations of the disease, very often hardness and rigidity of the muscles round the wound, and these signs can be seen or felt for days or even weeks before the occurrence of trismus. In a case on record these local symptoms had been present for three weeks before the trismus showed itself and before tetanus was suspected. One medical officer is reported to have said that symptoms of tetanus were present in a case but were not sufficiently severe to justify the use of antitoxin. According to present ideas it should no longer be permissible to wait for the occurrence of lock-jaw before pronouncing the word tetanus; 5,000 units of antitoxic serum are of more avail at the very beginning, when the disease is still localized, than 50,000 when the symptoms have become general. The moment, then, any local manifestation of tetanus is observed, it is recommended to proceed at once to vigorous specific treatment.

The treatment of tetanus may be divided into specific and symptomatic:

1. *Specific.*—Specific treatment consists in the giving of tetanus antitoxin, which has the power of rendering the tetanus toxin with which it comes in contact non-poisonous. From what has been said above about the injurious effect of delay, it is obvious that it is necessary to give antitoxin by the method which enables it to produce its effect most quickly. Subcutaneous injections of serum are absorbed very slowly, forty-eight hours may elapse before a dose is fully absorbed; hence little can be expected from this method at the beginning of treatment.

Experimental and clinical evidence has shown that the best results are attained by intrathecal injections of serum.*

This direct attack on the toxin in the neighbourhood of the central nervous system should be supplemented by intramuscular injections in order to neutralize any toxin in the blood, and thus prevent any more of it being taken up by the nerve endings in muscle. Absorption of antitoxin from muscle is rapid, reaching its maximum in about twelve hours.

In addition to the intramuscular method, subcutaneous injection can be practised at any time, and is particularly useful in the later stages in keeping up the antitoxic quality of the blood. Absorption reaches a maximum in two or three days.

It is recommended that intravenous injections should not be made, as the risks of anaphylactic trouble occurring are greater when serum is given intravenously than when it is given by any other route.

Dosage in the Therapeutic or Curative Treatment of Tetanus.

When given curatively antitoxic serum must be administered in very large doses.

In a case of tetanus the first thing to do is to give an intrathecal injection of antitoxin.

The amount of cerebro-spinal fluid which can be withdrawn will, as a rule, not be more than 20 c.cm. It is usually held to be undesirable to run in more serum than will replace the cerebro-spinal fluid drawn off, and in the cases when little or no fluid can be withdrawn, it is not wise to inject more than 20 c.cm. of serum, *and this very, very slowly.*

If the serum used be of the ordinary strength of 150 units in 1 c.cm., the patient will then receive a dose of some 3,000 in 20 c.cm.

If the serum be of higher potency—say, 800 units to the c.cm.—the patient will then have received 16,000 units. For intrathecal injections this high potency serum, if procurable, should by all means be used. At the same time, 5,000 to 10,000 units should be injected intramuscularly, and 3,000 to 5,000 may also be given subcutaneously.

The intrathecal injections may be repeated daily for three to five days, when they should as a rule be discontinued. The intramuscular and subcutaneous injections may be continued daily or oftener, according to the severity of the symptoms. When the disease shows distinct signs of abating the size of the dose may be gradually decreased, the interval between the doses lengthened, and the serum given only subcutaneously.

* A description of the method of performing an intrathecal injection is given as an appendix.

The following may be given as an example of the serum treatment which has been successfully employed in early, but well marked, tetanus:

Day.	Sub-cutaneous.	Intra-muscular.	Intra-thecal.
First day	—	8,000	16,000
Second day	—	8,000	16,000
Third day	—	4,000	8,000
Fourth day	—	4,000	8,000
Fifth day	2,000	—	—
Seventh day	2,000	—	—
Ninth day	2,000	—	—

2. *Symptomatic.*—Symptomatic treatment consists in the exhibition of sedative drugs. Perhaps the most suitable is morphine in ¼ grain doses, and administered every four hours; potassium bromide, chloral, chloretone, paraldehyde are also given by the mouth or rectum.

Carbolic Acid.—There is no convincing evidence that the carbolic acid treatment of tetanus has any curative effect whatever, or any action upon the course of the disease.

Magnesium Sulphate.—Treatment by sulphate of magnesium has no effect upon the disease itself. The cessation of spasm which follows an injection is only temporary, and is purchased at the cost of risks which are far from negligible. It is very doubtful if any real advantage is gained by its use.

Surgical Treatment of the Wound.

There is a general impression that it is of advantage to excise the wound or amputate the limb in cases of tetanus. The matter is one upon which there is considerable difference of opinion. From the clinical experience of many observers it would seem that these procedures are of little avail, and may actually accelerate the course of the disease. Animal experiment, so far as it goes, also suggests that operative measures are useless.

While more evidence is required before any dogmatic statement can be made, it appears safer to abstain from surgical interference with the wound until the ordinary treatment for tetanus has been carried out, unless there exist other and imperative reasons for immediate operation.

The irrigation of the wound with oxidizing agents, such as hydrogen peroxide, when this can be done without undue disturbance and without opening up the wound, is to be recommended.

Reporting and Care of Cases.

In every Command one or more officers with special knowledge should be detailed by the D.D.M.S. to visit and assist in treatment of cases of tetanus. These officers should be at the general hospitals of the district, and their names and telephonic addresses should be communicated to the officers and medical practitioners in charge of subsidiary and V.A.D. hospitals.

On occurrence of a case of tetanus the appointed officer will be immediately informed, and he will at once proceed to visit the case and offer assistance in the carrying out of such treatment as has been suggested in the present memorandum. He will if necessary assist in the operation of lumbar puncture and intrathecal injection. This will seldom be necessary, as from what has already been said as to the danger of even an hour's delay this intrathecal injection will usually have been done before his arrival, unless the distance to be travelled is short. He will make careful inquiry into the case in order to ascertain if any early symptoms had been present and had escaped notice. He will note what prophylactic injections had been made, and if omitted, why they were omitted. When visiting the hospital where the case has occurred he will ascertain if the other wounded men are receiving prophylactic injections. He should see that sufficient notes of the case are being kept in order that the tetanus form can be filled up as fully as possible. For example, it is very seldom that the distinguishing marks on the bottles of serum are reported. If serum trouble arises it is evident that this information would be useful. He will forward an inspector's report to Surgeon-General Sir David Bruce, with as little delay as possible. The ordinary tetanus report will be filled in by the medical officer in charge of the case.

Officers in charge of hospitals will be responsible for the administration of the second and following prophylactic doses of antitoxin to all wounded under their care, unless reasons exist for withholding them. The administration of antitoxin will be recorded on the case-sheet. They will also, as heretofore, inform Surgeon-General Sir David Bruce, by telegram, of the occurrence of a case of tetanus, and on the death or recovery of the case forward the usual tetanus report in accordance with War Office instructions.

Any abnormalities of behaviour of antitetanic serum should be carefully noted and reported.

As the Tetanus Committee was appointed for the purpose of studying tetanus, it is greatly to be desired that every medical officer will co-operate in a collective investigation, and submit any evidence in his possession which may add to our knowledge of the disease and its treatment.

War Office, S.W.,
October 25th, 1916.

APPENDIX.

The Method of Performing an Intrathecal Injection.

The patient should preferably be under general anaesthesia, but the operation can be performed with local anaesthesia. The skin over the area of the fourth and fifth lumbar spines should be painted with iodine or cleansed with soap and water followed by an antiseptic. A spinal needle and 20 c.cm. syringe should be boiled in normal saline, *and the surgeon must observe throughout the most rigorous aseptic precautions.*

The patient is bent head to knees, so as to present as fully a curved back to the operator as possible, and the position of the fourth lumbar spine ascertained by drawing an imaginary line between the crests of the ilia.

The tip of the finger is placed on the supraspinous ligament connecting the summits of the spinous processes of the fourth and fifth lumbar vertebrae. The needle is inserted about three-eighths of an inch to one side of the middle line and directed forwards and slightly upwards and inwards. If the needle strikes the bone it should be withdrawn and a fresh attempt made. The canal is reached at a depth, on an average, of about 2½ inches. The trocar is withdrawn and about 20 c.cm. of cerebro-spinal fluid allowed to flow out into a measured vessel. The syringe is then fitted to the needle and the serum injected.

It is important that the serum be heated to the temperature of the body and the injection made very slowly.

The canal can also be reached by pushing the needle through the supraspinous ligament in the middle line half-way between the two spinous processes.

If several injections have to be made, it is well to choose fresh sites.

Blocking of the flow of the cerebro-spinal fluid by a blood clot may be overcome by reinserting and withdrawing the trocar.

The bed should be tilted at the foot and the pillow removed for an hour or two after the injections.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

TWO CASES OF ACUTE ILLNESS IN OLD MEN WITH VALVULAR DISEASE OF THE HEART.

A man aged 85, who was in the habit of taking frequent "nips" of any drink in which his friends would join him, was taken ill with pneumonia. Dr. Russell, of Birmingham, saw him with me in consultation on the fifth day of the attack, and we agreed that he had no chance of surviving, but the crisis came on the twelfth day, he made an uninterrupted recovery, and lived for two years afterwards. The patient had had a loud systolic bruit at the apex of the heart ever since I had known him, which was about eight years.

A man, aged 93¾, was operated on at the age of 79 for strangulated inguinal hernia, but his condition at the time was too serious to admit of a radical cure being performed. Latterly he omitted to wear a truss, with the consequence that the hernia again became strangulated. I was unable to reduce it after the application of an icebag, so I operated; I found about 10 in. of small intestine in the sac, and one coil was adherent to the lower part of the sac by a band about the thickness of the little finger. The intestine was of a dusky red colour, but not gangrenous; it was returned without resection. This patient also made an uninterrupted recovery. I do not know whether this constitutes a record, but I should think it did. He also has a loud systolic bruit at the apex of his heart.

The interesting point about both cases is the fact that both had a loud systolic bruit, and I think that probably

this had much to do with their recovery, as the arteries in both cases were very elastic, and there were no signs of high arterial tension.

Stratford on-Avon. WILLIAM F. BOX, M.B.Lond.

AN UNUSUAL CAUSE OF DUPUYTREN'S CONTRACTION.

I RECORD this case as it may be useful and instructive from more than one point of view.

The patient, a miner of about 40 years of age, had had asthma and bronchitis for over fifteen years to my knowledge. For the last five or six years the asthma attacks have been very severe—so bad, in fact, that he has not done any work for the last three years.

His chest is typically emphysematous (barrel-shaped) on account of the expiratory dyspnoea, and he has to bring all his extraordinary muscles of respiration into play. In order to do this he requires a fixed point to work from, which he gets by pressing his hands firmly on the bed. This pressure on the hands has caused the absorption of the palmar fat and the subsequent adhesion of the skin and fascia.

I have never seen a case of Dupuytren's contraction in a miner, although I have practised among them for the last fifteen years. These cases are common, I know, among carpenters, electricians, etc. For the asthma, I tried the usual remedies without much success, but the patient got most relief from potassium iodide and creosote mixture, together with an indiarubber jacket (the first was made out of the inner tube of a motor tyre), perforated, and put on tightly next the skin to assist expiration.

Wigan. ROBERT GIRDWOOD, L.R.C.P.Edin.

Reports of Societies.

THE CARE OF PREGNANT WOMEN.

AT a meeting of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine on November 2nd, the President, Dr. G. F. BLACKER, being in the chair, Dr. S. G. MOORE M.O.H Huddersfield, opened a special discussion on the need for improvement in the care of pregnant women. The subject, he said, was of national importance, and should be dealt with on national and not local lines. In child-bearing, discomfort, disease, and death were, strictly speaking, abnormal. There were substantial reasons for the belief that part of the reduction of the birth-rate resulted from a fear of them. An average of 3,500 deaths occurred from childbirth each year in England and Wales. A far greater number endured preventable suffering and disablement. A compilation of the entries in the returns of deaths connected with pregnancy for Huddersfield from January, 1906, to October, 1916, showed that eclampsia caused 30 deaths; albuminuria and eclampsia, 3; albuminuria, 36; septic absorption, puerperal fever, and pneumonia, 32; *post-partum* and *ante-partum* haemorrhage and retained placenta, 24; conditions connected with parturition, Caesarean section, etc., 11; embolism, pulmonary and cerebral, 10; and intractable vomiting, 2; other causes connected with pregnancy accounted for only inconsiderable numbers. Some of the women with albuminuric conditions would not have died if they had been under proper care for two months; deaths from septic causes were entirely eliminable; how far deaths could be diminished in the remainder was uncertain. As a means of securing improvement of the conditions of pregnant women he advocated notification of pregnancy, since the majority did not come under a doctor's care until abnormal conditions had had time to become serious. He could see no objection to notification, since it was an honourable state which could not be concealed. On the receipt of the notification the woman could be examined and her surroundings considered by a duly qualified medical practitioner. The sanitary authority should take no action, but each case should be referred to the family doctor. Such a scheme had been in operation at Huddersfield during the present year, a fee of 2s. 6d. being paid to doctor or midwife for notification, which was only permissible with the woman's consent. All cases were referred to the family doctor. Help was obtainable from voluntary organizations, not from the sanitary authority. From January 1st to October 31st 1,536 births had been notified, and 156 pregnancies—that is, about 10.1 per cent. Of the pregnancies, 130 were uncomplicated, and 26 accompanied by complications. There were varicose veins in 7, exanthemata 6, vomiting 2, albuminuria 2, phthisis 2, serious domestic difficulties 2, haemorrhage 1, chicken-pox 1, diphtheria 1, sepsis 1, and prolapse 1. The birth rate was declining alarmingly; the death-rate had also fallen considerably, but could not be reduced much more. Not only had the deaths of the mothers and children to be considered, but the soundness of the surviving children. Steps must be taken to prevent the great wastage of maternal and infant lives if we were to avoid becoming a subject race.

Dr. AMAND ROUTH said that he agreed with almost everything contained in a recent paper by Dr. A. Donald (BRITISH MEDICAL JOURNAL, July 8th, 1916, p. 33) except his conclusions. Supervision of all pregnant women was not an unnecessary trouble, for experience had shown that women needing treatment did not present themselves voluntarily. The results attending such supervision were not likely to be small, since emergencies for Caesarean section and others with eclampsia continued to be admitted to hospitals. At Queen Charlotte's Hospital the number of cases of albuminuria admitted during 1914 was 557. With regard to the statement that there were much more important causes of fetal death, such as abortion and stillbirths during delivery, than the diseases of pregnancy, he would ask why were there 3 per cent. of stillbirths, and why were there so many macerated fetuses if stillbirths were so dependent upon delivery? During 1914 at Queen Charlotte's Hospital there were 100 stillbirths, of which 26 were of macerated fetuses. The large majority of macerated fetuses were due to syphilis, and Dr. Mott had indicated the prominent part which syphilis played in stillbirths and abortions. Spirochaetes were found in the placentae in the former, but not in the latter, yet women believed to be infected often had both abortions and stillbirths in a series of pregnancies. There had been no systematic antenatal work before 1911. Midwives should be encouraged by the Midwives Board to extend their care to the unborn child. The death-rate of unborn infants was probably greater than after birth when it was considered that there were 3 stillbirths to 100 ordinary births. More interest was now being taken in the unborn child, and there were now about 750 centres established in Great Britain and Ireland. The general practitioner must be able to supervise efficiently his patient, for with due supervision many conditions might be discovered and proper treatment applied. Prematernity beds were necessary in every hospital. He did not think that compulsory notification could be carried out at present because of ignorance and resistance on the part of the mother, who would postpone notification until the last minute. Research work was necessary, and pathological facilities should be provided. *Post-mortem* examinations should be made on stillborn children, and the *Spirochaeta pallida* should be looked for. Every pregnant woman should be seen by a doctor, and should then have such supervision as the condition required.

Dr. COMYNS BERKELEY said that the question of the "maternity centre" first came prominently before the medical profession on the passing of the Notification of Births (Extension) Act, 1915, when the Local Government Board addressed a circular to the county councils and sanitary authorities pointing out, among other things, that Section 2 of the Act enabled them to make arrangements for the care of pregnant women, and that the Government had agreed to finance any such scheme up to one-half of its cost by means of annual grants. The Board was careful to state that it would expect medical advice, and where necessary treatment, to be continuously and systematically available to the pregnant mother, and that to enable this to be done efficiently the local authorities must start maternity centres in populous districts. Every doctor and midwife would agree that a pregnant woman had a right to the greatest possible care and to the best possible treatment that medical science could give her during this important and trying time of her life, and this not only for her own sake but also for the sake of the nation and of her child. The British Medical Association had passed a resolution to the effect that it was entirely in favour of any scheme which would encourage prospective mothers to arrange in advance for their nursing and medical

attendance during the period of pregnancy, but evidently it was doubtful as to whether the scheme suggested by the Local Government Board was the best means of securing it. That scheme proposed that the staff of the maternity centre should consist of medical men or women and non-medical women, working under the direction of the local M.O.H. The Local Government Board seemed to consider that the best possible medical officer to have charge of such a centre would be a whole-time paid official. This impression had led to the conclusion "that there would be a tendency under such a scheme to the formation of a class of practitioner who would be wholly concerned with the treatment of disease in expectant mothers and in young children, and that almost the whole of actual practice among such patients may be withdrawn from the general practitioner." Further, "if the medical and surgical treatment of the public is to continue to be (as it should be) in the hands of general medical practitioners, aided by suitable opportunities for consultative and pathological assistance, the effect of this must be seriously detrimental to public and profession alike." The Local Government Board was very anxious that medical practitioners and midwives should co-operate in its scheme, and with this object suggested as alternatives that the head of the maternity centre should be a practitioner from another district, or—and this was the arrangement it considered least satisfactory—a rota of practitioners from the neighbourhood. It agreed that the work of the maternity centre would be more effective if it secured the co-operation of the midwives of the district and of the medical practitioners who should be consulted in its organization. According to the scheme of the Local Government Board, the doctor at the centre would make a careful examination of the heart, lungs, and kidneys of the expectant mother, and, when considered necessary, would measure the pelvis. If serious organic disease were detected, the patient would be advised to have medical aid at home; failing this, arrangements would be made to send her into a hospital. Any immediate treatment would be given at the centre, or by the private doctor of the patient, or by the hospital, and no responsibility would be undertaken at the centre for continuous treatment. As the work of the centre could only succeed in producing the best results when combined with home visiting, health visitors, or in some cases special visitors appointed for this work, would visit the homes of the patients to see that the advice given had been thoroughly understood, and was being carried out. It would therefore be necessary for the health visitor to have been present at the medical consultation at the centre. This scheme of the Local Government Board, unless properly safeguarded, would in the long run vitally alter the status of the profession and the relation between doctor and patient, to the detriment of both. Such a scheme would have a tendency to eliminate the "family doctor," the best person to give advice to his patients and to treat them. Again, the tendency of the Insurance Acts to provide every worker with medical attendance on the lines of private practice might be interfered with. About 50 per cent. of the total number of pregnant women, and 75 per cent. of working women, engaged midwives to attend them, and this scheme might affect the midwives more than the doctors. The chief cause of the opposition of the midwives to it was the proposal to take their supervision out of the hands of the councils and county boroughs and transfer them to the borough councils. The midwives seemed very certain that this would be a move backward. Such a transference of supervision had been tried, but proved so unsatisfactory that the counties which had delegated their powers had to revoke their delegation. Moreover, a Departmental Committee, which met to consider the working of the Midwives Act, expressed the "emphatic opinion of the Committee that this power (of delegation) should be withdrawn, and that in cases where it is still exercised it should be revoked." It was a great advantage for a midwife to be responsible to one inspector only, whereas under the proposed scheme a midwife working in London, for instance, might be responsible to the inspectors of as many as five or six borough councils. Midwives were to be encouraged to accompany their clients to a centre or to send a note to the doctor concerning them. But who was to pay the midwives for this extra work? The work at the maternity centre would be primarily one of examination, but, supposing a pregnant woman was examined by her doctor, as she should be, would she not be very likely to resent a further detailed and somewhat prolonged examination? Dr. Comyns Berkeley then explained a scheme proposed by the British Medical Association in lieu of that advocated by the Local Government Board. At the Representative Meeting in 1915 the two following resolutions were passed:

A. That in the public interest the employment of private practitioners would be the best system for adoption.

B. That such a system would be beneficial and attractive to the medical profession itself, and therefore its adoption would not only be the best in the public interest, but would also be the line of least resistance.

The scheme proposed was as follows:

1. General supervision, including responsibility for records and statistics and the following up of cases to ensure that adequate treatment is obtained, to be undertaken by a supervising authority, preferably the medical officer of health, assisted by nurses or health visitors.

2. Attendance at a centre, or at such places as may be arranged for the purpose of (*a*) giving advice and (*b*) deciding if treatment is necessary, and the treatment at this centre of such selected classes of cases as may be determined upon by the local authority. This work to be undertaken by all those local practitioners who are prepared to do it. Such practitioners would be required to attend at the centre or arranged place for a specified time on certain days at fixed intervals.

3. Treatment of all cases requiring ordinary medical attendance, to be undertaken either at the centre, at the doctor's surgery, at the patient's house, or at an institution.

4. All persons referred to the centre to be allowed to choose whichever doctor on the list they prefer to consult.

The work of this rota of doctors would consist in the examination and advice to expectant mothers, and the keeping of such records and the giving of such treatment as is included within the scope of the scheme.

The midwives also suggested that the practising midwife should be included in either scheme. Those who spoke on their behalf pointed out that the practising midwife would get in touch with the pregnant woman earlier than any official, that she was often the only confidant of the single pregnant woman, and that such knowledge was of very great importance in regard to the question of abortion. Midwives were now trained to recognize conditions requiring medical advice, and by the rules of the Central Midwives Board were bound, when they discovered that the patient was in need of such advice, to refer her to a doctor. It was more than probable that if suitable arrangements could be made with the doctors a more educated class of women would become midwives. At present, a large number of the women who passed the examination of the Central Midwives Board, and who would be most suitable for midwives, did not practise as such. Proper antenatal care of the poorer pregnant women would not be secured until the midwife was made to feel her full responsibility. Many practitioners were in favour of the voluntary notification of pregnancy, and there were some against, but at the present time the vast majority of practitioners in the United Kingdom were dead against "compulsory notification." Although the Local Government Board was at pains to indicate that it did not approve of compulsion, and distinctly stated that such notifications should not be made unless the express consent of the expectant mother had been previously obtained, a large number of doctors, with the recollection of what had happened before under somewhat similar circumstances, could only see the thin end of the wedge in this insistence on the advantages of voluntary notification. Their fears in this respect were not allayed by the action of the authorities of the city of Nottingham, which was issuing to the midwives in its district formidable looking documents, surmounted by the arms of the city, asking the midwives to notify upon these documents the names of their pregnant patients, and also the answers to a number of questions of a very personal and private nature concerning them. These documents had apparently been regarded by some midwives as a demand; they could be returned through the post, unsealed, for the cost of a halfpenny. Again, the Huddersfield authorities, by offering half a crown to the doctor or midwife for each patient notified, did not intend to let the grass grow under their feet. Expectant mothers used to make the necessary arrangements for their confinement much earlier in pregnancy, but since the advent of the maternity benefit, because they knew this money was coming in, the present tendency was for them to put off engaging their attendant till, on the

average, about two months before the confinement. There were those who believed that the notification of pregnancy, if compulsory, would postpone the necessary arrangement being made for the confinement to an even later date. Many women would consider the visits of the health visitor resulting from notification as an intrusion, and would, on that account alone, delay engaging a doctor or midwife till the last moment. Until notification became compulsory single women would certainly postpone engaging an attendant till the last possible moment, and in many cases they were the very women who ought to be got hold of. The Local Government Board had professed a platonic respect for the proposal that the general practitioner, wherever possible, should be used in the antenatal schemes; past experience, however, inclined the practitioner to believe that the Board would practically give its weight to the whole-time scheme. In the London school clinics such a method as that proposed by the British Medical Association had been a great success, but no local authority had yet given this method a trial with respect to antenatal clinics. The Local Government Board thought that a rota of doctors was the least satisfactory method of dealing with the subject, but the British Medical Association's proposal did not imply a rota in the strict sense of the word. The word "rota" had a sinister meaning, giving the impression that patients seen at one visit by one doctor might very well be seen at the next by another. The British Medical Association's plan meant nothing of the sort. It aimed at these men serving for stated periods which should be long enough for them to become expert at the work. They must attend regularly once or twice a week at a stated place, and the patient on her return visit would be seen by the same doctor. Such a scheme would have the great advantage that within a certain time all the younger medical men in a locality would have passed through the maternity clinics, to the great advantage of the community and to themselves. It was not true to say that general medical practitioners were hostile to the proposed scheme of the Local Government Board, but it was hostile to any attempt to apportion to whole time officials work which it believed could be done as well or better by the general practitioner. As to the guarantee of the competency of the members of the medical staff, it must not be forgotten that many so-called specialists in tuberculosis, for instance, were youths and maidens, with a high qualification, perhaps, but with an experience that in many cases extended to only a few months in the subject in which they posed as specialists. The highly specialized members of the profession were not doing their duty to their profession or to the community unless they interested as large a number of general practitioners as possible in such a scheme as that suggested by the British Medical Association. General practitioners, like medical officers of health and consultants, were good, bad, and indifferent, but it behoved those who had the interests of the nation at heart to try to improve their position and insist on their taking a part in these communal schemes, not only because they were members of the medical profession, but because the community could not dispense with that experience or that knowledge of human nature which they acquired by virtue of their daily work.

Lady BARRETT said that the central factor of any scheme was the mother, and all plans must conform with her wishes. Three activities were necessary—medical, educational, and social. The medical needs were three—supervision during pregnancy, attention during labour, and supervision during lactation. An obstetric specialist should be available for every mother. There was also the educational need. Matters appertaining to a healthy pregnancy and delivery and healthy infancy must be taught over and over again in the home after a first instruction at a centre. The social need included the provision of suitable houses and environment for parturition. Hospital conditions were necessary if the home provided no single room which could be set aside for the delivery and lying-in period. Nursing for the mother, cooking, and household work had also to be arranged; much of the household work done by an expectant mother was far worse than the much-abused outside work. To obtain these desiderata there was need for closer co-ordination between existing agencies and an extension of activities. The maternity centre was a focus around which these activities could crystallize. Two types of institution were involved—the hospital centre and the local centre. Three principal forms of work were concerned: (1) That of sanitation, by the medical officer of health and the public health committee; (2) medical, including a centre in a hospital; (3) educational and social, which gave scope for voluntary workers. The hospital centre should include out-patient consultation clinics for maternity cases, infants, and children up to school age, as well as pre-maternity beds and provision for pathological investigation. The Poor Law infirmary maternity work would then cease to exist, to the benefit of both mother and child. Small local centres were needed to supply the needs of the poor mother, and these should include also infants' consultations and dental clinics. The mothers should be referred to the doctor who would attend them at delivery. The health visitors needed special training, and for them a uniform qualification should be established. The mother would be referred by the health visitors or midwives to the local centres, where they would be seen either by a whole-time medical officer or by a rota of the local practitioners. Such measures would secure the same end as compulsory notification, which was repugnant to the mother.

Professor MUNRO KERR said that those who required to be cared for included all pregnant women, and could be constituted into three groups. First, those who were well off, and would probably be efficiently looked after in any case. Secondly, a large body of the lower middle class containing women who often drifted into a serious state; the conditions of this group could readily be made satisfactory. Thirdly, the lowest class in the social scale. Appeals to this class were absolutely futile, and legislation was alone useful. An intimation of pregnancy to their own doctors should be made compulsory, and, after the confinements, this intimation should be forwarded by the doctors to the medical officer of health. The penalty for failing to intimate should be a reduction of the maternity benefit. The Glasgow scheme included a senior clinic, and in touch with it smaller maternity centres in the different districts.

Professor H. BRIGGS said that the one need for a successful scheme which would work without difficulties was co-operation by all parties interested.

Dr. KRIVSKY (Petrograd) gave an account of the maternity needs in Russia. In the fifty central provinces of European Russia the birth-rate had declined from 49.9 per 1,000 (1894–96) to 43.1 per 1,000 (1913), and the death-rate from 36.3 per 1,000 (1892–95) to 27.4 per 1,000 (1913). The natural increase in the population was 15.7 per 1,000. The mortality among children under 1 year was 27.2 per cent., as compared with Sweden 7.1 per cent., and Norway 6.7 per cent. From 5,249,677 births in 1913 there were 870,000 miscarriages and stillborn children. Russia needed 37,000 beds for lying-in women, and 60,000 midwives, instead of the present number of 14,361. In 1912, 7,033,507 children had been born alive—25,240 in lying-in hospitals; 95 per cent. of the confinements occurred without any obstetrical help whatever.

Miss ROSALIND PAGET, speaking from the point of view of the midwives, said that four things were needed—early booking, up-to-date instruction of the midwives, facilities for medical treatment, and the securing of the right kind of midwife. Early booking would be prevented by notification as it had been by the maternity benefit. The midwives would co-operate and needed only to be told how this might best be done. She urged that they should not be excluded from any scheme for antenatal care.

The PRESIDENT mentioned that a scheme fulfilling almost all the recommendations of the Local Government Board was working at University College Hospital, and advocated its application to other hospitals.

MASSAGE OF THE HEART.

AT a meeting of the Section of Anaesthetics of the Royal Society of Medicine on November 4th, Mr. GEORGE ROWELL, President, being in the chair, Mr. W. M. MOLLISON read a paper on a successful case of heart massage following heart failure under an anaesthetic. The patient, a healthy but slight boy, aged 6, after due preparation, was given a mixture of two parts of chloroform to three parts of ether for removal of tonsils and adenoids, considered advisable

as a treatment for asthma and bronchitis. During the removal of the second tonsil some struggling occurred and was followed by shock, the pupil dilating and respiration ceasing. After the throat had been swabbed out, artificial respiration by the Sylvester method and stimulants were employed without improvement. Pituitary extract (0.5 c.cm.) was injected subcutaneously, and later into the heart, but evoked no response. The heart sounds could not be heard. An incision was then made through the abdominal wall, accidentally cutting into the liver, and the right hand inserted between the liver and the diaphragm. Between this hand and the other applied to the precordium the heart, which had ceased beating, was massaged at the rate of ninety movements a minute. At first respiration began and the pupil contracted, but the heart failed to respond; 1 c.cm. of pituitrin was injected into the heart and the massage renewed, and after about twenty movements the heart beat strongly. It was almost certain that the time during which the heart stopped was between thirteen and twenty-four minutes, and probably about twenty minutes. The whole episode lasted about thirty-five minutes. When taken back to bed the patient's condition was still very poor and saline infusion was employed. One hour later the boy was restless and developed choreiform movements, during which his intestines protruded through the abdominal wound, which had been hurriedly stitched up. These were put back later when consciousness returned. For seven days he was more or less unconscious: then consciousness gradually returned with relapses back to unconsciousness. During the second week there were periods of rigidity, tetany, and screaming, which was almost continuous for thirty-six hours. He was violent, and there was incontinence of both urine and faeces, and he presented the picture of severe cerebral irritation. At the end of fourteen days he had much improved, and eventually made a perfect recovery, his mentality becoming equal to the standard for his age. Of thirteen recorded cases of successful or partially successful heart massage which Mr. Mollison had collected, in nearly all a short time only had elapsed from the cessation of the heart's beat until the procedure was begun. The partially successful cases were most interesting, for in them similar unconsciousness, rigidity, cramps, and incontinence had subsequently occurred. The same phenomena accompanied cerebral anaemia, to which they could be ascribed in these cases. A study of his case and of the records seemed to indicate that heart massage should not be postponed too long, and ought always to be performed through an abdominal wound.

Dr. J. Blomfield agreed that this was an instance in which heart massage was essential, but it was doubtful whether the same could be said of many other recorded cases. It was difficult to determine how long to wait before employing it. This case was in favour of delaying where children were concerned, for adults the delay must be shorter. Although justifiable and needful in the present case, it would be a serious matter if it became customary to resort to it as a routine measure when the heart stopped under anaesthesia.

Dr. M. S. Pembrey said that the fact that artificial respiration could be of no use in the absence of circulation was often overlooked. It had been shown that the human heart could be revived by perfusion, and made to start beating again some hours after death. The cerebral irritation certainly indicated that there had been cessation of the circulation for a considerable period. Children withstood a lack of oxygen better than adults.

SHELL SHOCK AND TRAUMATIC EPILEPSY.

At a meeting of the Harveian Society on November 2nd, the President, Dr. Edmund Cautley, being in the chair, Dr. E. Farquhar Buzzard read a paper entitled "Warfare on the brain," dealing chiefly with shell shock and traumatic epilepsy. Shell shock, a much abused and unfortunate term, covered, he said, a number of groups of cases: (*a*) cases of pure exhaustion; (*b*) cases in which exhaustion had excited inherited neuropathic and psychopathic tendencies into activity; (*c*) "martial misfits," who passed as normal individuals in civil life but were quite unable to bear the strain of military service; in these groups direct exposure to shell explosion might be absent, or at most was merely a culminating factor in the production of symptoms; (*d*) normal individuals affected by close shell explosion who showed symptoms similar to those following a blow on the head. In making a diagnosis care must be taken to exclude the presence of organic changes in the skull or brain. The symptoms of mutism, etc., were hysterical, and signified mental disorder and not a localized cerebral injury. In traumatic epilepsy the principle underlying surgical interference was not to cure the epilepsy, but to restore the injured part of the brain as far as possible towards the normal; where operation would have the opposite effect it was contraindicated. The treatment of the epilepsy itself was medical, and the prophylactic use of bromide in cases of head injury was of great importance. The problem of the treatment of the large numbers of these cases occurring at the present time was of national importance.

TREATMENT OF PLACENTA PRAEVIA.

The first meeting of the Leeds and West Riding Medico-Chirurgical Society for the Session 1916–17 was held at the Leeds General Infirmary on October 27th, when the President, Dr. W. R. Bates was in the chair. Professor J. B. Hellier read a paper on the treatment of placenta praevia, in which he discussed the place of Caesarean section in dealing with this condition. He said that when there had been one well-marked haemorrhage modern opinion was strongly in favour of terminating the pregnancy without delay. Given a patient who was not in labour and whose genital canal was uninfected, Caesarean section by a man accustomed to abdominal surgery might be strongly recommended. He quoted three cases in point. In one a lady who had a severe attack of flooding had been treated expectantly and a second attack of flooding had proved fatal before she could be delivered by version. In two other cases, after the first haemorrhage he had performed Caesarean section and had saved both mothers and children. He recommended that such cases should be transferred to a nursing home or hospital after the first haemorrhage for treatment by hysterotomy. He did not say that all cases of placenta praevia should be treated by Caesarean section, and many would still be treated by version, but he strongly insisted on the importance of not waiting after version had been performed till the uterus expelled the child by natural efforts.

Reviews.

MINERS' PHTHISIS IN SOUTH AFRICA.

In the Milroy lectures for 1915 Dr. E. L. Collis gave an admirable account of the industrial pneumoconioses, or disorders of the lungs following the inhalation of dust, to which the workers in certain trades are exposed in this country. The Home Office has its eye on these trades, and "dust phthisis," as it is sometimes called, or the disorganization of the pulmonary tissues by the inhalation of siliceous particles with or without a superimposed infection with tubercle bacilli, does not nowadays add very considerably to the death-rate of Great Britain. In South Africa, however, affairs are otherwise. Here silicosis of the lungs, or "miners' phthisis" as it is confusingly termed, is of great importance as the cause of a high mortality amongst men employed underground in the Rand mines. Its clinical and pathological aspects have recently been made the subject of a report by Drs. Watt, Irvine, Johnson, and Steuart, published by the Miners' Phthisis Prevention Committee[1] in South Africa. "Miners' phthisis" is defined as a general term applied all the world over to cases of chronic disease of the lungs occurring amongst metalliferous miners, and traceable to occupational conditions. It includes cases of uncomplicated silicosis (or impregnation with siliceous dust) of the lungs, and also cases of silicosis complicated by infective processes of which the most common is tuberculosis. The presence of silicosis is the pathological condition upon

[1] *Silicosis (Miners' Phthisis) on the Witwatersrand.* By A. H. Watt, M.B.Edin., F.R.C.S.E.; L. G. Irvine, M.A., M.D., B.Sc.(Pub H.)Edin.; J. P. Johnson, M.B.Lond., M.R.C.S.Eng., B.S.Lond., D.P.H.Oxon.; and W. Steuart, M.R.C.S., M.I.E.E. Pretoria: The Government Printing and Stationery Office. 1916. (Demy 4to, pp. 130; 30 figures.)

which the inclusion of a case as one of "miners' phthisis" rests. The silica reaches the lungs by inhalation; a vast amount of very fine siliceous dust is produced by the operation of blasting in the Witwatersrand, and it is calculated that a cubic metre of the dusty atmosphere produced by blasting may contain half a gram of dust, in the form of some 86,000 million particles 12 μ or less in diameter. The drilling of the rock may also produce large quantities of fine dust. It is satisfactory to know that the amount of air-borne dust produced by both blasting and drilling can be kept down to a small fraction of the original amount by the use of efficient water jets at the seat of operation. In all mine dusts from 95 to over 99 per cent. of the dust particles in the air are below 12 μ in diameter; the particles actually reaching the workers' lungs are mostly less than 1 μ in diameter, and none of them appear to be more than about 10 μ in length. It is thought that very little harm is done to the workers or their lungs in actual practice by inhalation of the carbon monoxide and nitrous fumes generated by blasting in the mines. The risk of infection with tubercle bacilli in the mines appears to be considerable. Thus 15 per cent. of samples of sputum obtained underground, chiefly from shafts and main travelling ways, showed the presence of tubercle bacilli, as against only 2.5 per cent. of samples collected in the living rooms or places of resort of white and native mine workers on the surface. The tubercle bacillus will survive for at least two months in acid mine waters. It is argued that the control of tuberculosis—the segregation of phthisical persons and the prohibition of spitting—must constitute a most important part of any policy aiming at the reduction of mortality and disablement by "miners' phthisis."

As regards the incidence of silicosis in the Witwatersrand, the different classes of mine workers are affected in proportion to the amount of exposure to dust their work entails, and the duration of that exposure. No doubt, too, certain individuals are more prone to develop silicosis than others. In 1911, out of 3,136 white underground miners actually at work, 32 per cent. were found to show the signs of pulmonary silicosis. The disease was found to fall most heavily on machine-drill miners; 48 per cent. of them were affected, and it was more rapid and more regularly progressive among them than among any other group of underground workers. But even the supervisory staff was not exempt from the risk of silicosis. Since 1911 the systematic use of dust-laying appliances in the mines has become general and much more thorough, and "miners' phthisis" is now much less general than it was five years ago. Describing the pathological anatomy of the condition, the authors of the report define "early silicosis" of the lungs as a discrete fine fibrosis resulting from dense aggregation of dust particles along the small blood vessels and bronchioles, and in the interalveolar, interlobular, and subpleural tissue to a less extent. To the naked eye the lung appears almost normal, but for scattered pigmented areas. The *x* rays show a slight increase in the opacity of the lung, which is a little mottled and unduly streaky. The next stage of silicosis is described as "intermediate silicosis," and is a diffuse fine fibrosis, with a reactive proliferation of the connective tissue of the lung generally. To the naked eye the pleura is a little thickened; the lung tissue is tough and mottled, the cut vessels and bronchioles stand up from the cut surface, the pigmented areas are larger and more palpable than normal, and small silicotic nodules can be both seen and felt. Advanced pulmonary silicosis consists in the development of nodular and massive fibrosis throughout the lung tissue. Such a lung feels like a bag of small peas, with larger dense areas here and there. The bronchial glands are definitely enlarged. Under the *x* rays these lungs present what is called a "snowstorm" appearance. The areas of massive fibrosis or fibroid consolidation in such lungs may be due either to the coalescence of fully developed silicotic nodules, or to a massive increase of a diffuse fine fibrosis, or, and most often, to a chronic tuberculous infection of the silicotic lung.

As regards the signs and symptoms, it is stated that in early silicosis the patient is a little short of breath on exertion and has recurrent bronchial colds, but the working capacity is not noticeably impaired, perhaps for many years. In intermediate silicosis definite shortness of breath on exertion, morning cough, a marked tendency to bronchitis, and pleuritic pains appear; the general health often remains quite good. The patient's chest shows, on examination, an emphysematous shape, impaired note on percussion and diminution in the breath sounds. In advanced pulmonary silicosis the cardinal symptoms are great shortness of breath, cough, expectoration, loss of weight and strength, and great emphysema with breathing that is almost wholly diaphragmatic. The cough is typically a cough of irritation; in typical silicosis the chest is dry, with few adventitious sounds till late in the disease. Death may occur after short illness from oedema of the lungs, heart failure, or intercurrent disease. Pleuritic sounds are common in intermediate and late silicosis. Tuberculosis may complicate silicosis at any stage, usually towards the end: often the course is rapid, with fever, wasting, streaky haemoptysis, pleurisy, and excavation of the lungs. The prognosis is not bad in early silicosis, and good practical recovery may take place even in late medium silicosis; it is certain that no man with definite pulmonary silicosis should continue to work underground. Full details of the skiagraphic appearances of the lungs in silicosis are given in the report, with photographic reproductions. There are also excellent coloured plates showing the naked eye appearances, and a number of microphotographs.

FLEAS.

MR. J. WATERSTON has contributed to the Natural History Museum's series of economic pamphlets an extremely readable account of the *Fleas*,[2] a group of insects with which he is fully qualified to deal. The external anatomy is described in some detail, in order to give the reader an understanding of the characters on which fleas are classified. This is followed by an account of the internal anatomy, and of the mechanism whereby the flea transmits the plague bacillus. The view is adopted that infection does not usually take place by contamination with the faeces of the flea, but that it is produced because the flea's stomach is blocked completely by a plug of multiplying bacilli; when, therefore, the flea sucks the blood of an uninfected man or rat the blood is regurgitated into the wound because it cannot pass beyond the gizzard; it is this regurgitated blood which produces infection. The *Bacillus pestis* has never been found in the salivary glands of the flea. The life-history and habits are dealt with at some length because a knowledge of these is the only rational basis for efforts at control. The eggs are deposited quite loose among dust and organic refuse, and it is in such surroundings that the larva lives. The larvae, which are very small and difficult to detect, can be found in the baskets of not a few dogs and cats moving in very high circles. The larva passes into the pupal stage within a minute silken cocoon which it spins. It would appear that powdered naphthalene is noxious to fleas over a considerable area; that its odour is only repellent to lice when they are in immediate proximity to it has lately been shown by Mr. A. Bacot. A select bibliography is appended to this excellent little work.

NATIONAL INSURANCE LAW.

THE Commissioners have just issued a compendious volume, extending to nearly 700 pages, containing all the statutes, regulations, and orders relating to National Insurance which were in force on September 30th last.[3] It was inevitable at the beginning of such a huge scheme that there should be quickly made a multiplicity of regulations and orders dealing with all its various branches, and it was practically bound to happen that many such regulations and orders would sooner or later have to be revised or revoked in the light of further experience. As a result it had become an extremely difficult matter for officials of societies, insurance committees, and others engaged in the administration of the Acts to unravel the tangle of documents which soon existed, and for some time there has been an urgent demand for some consolidation into codes. That also was impossible so long as there was every

[2] *Fleas as a Menace to Man and Domestic Animals: Their Life History, Habits, and Control.* British Museum (Natural History) Economic Series, No. 3. London: The British (Natural History) Museum, B. Quaritch, and Dulau and Co., Ltd. 1916. (Demy 8vo, pp. 22; 6 figures. Price 1d.)

[3] *The Statutes, Regulations, and Orders Relating to National Health Insurance, with Notes, Cross references, and an Index.* Published by authority. London: Wyman and Sons. Edinburgh: H.M. Stationery Office. Dublin: E. Ponsonby, Ltd. September, 1916. (Pp. 679. 2s. 6d., or post free 3s.)

prospect that it would be necessary to issue a rapid succession of fresh regulations and orders, but apparently the time has now arrived when the consolidation now presented will have a chance of not being very seriously disturbed for some time. If this view be correct we may now expect that we have at length arrived at something like a firm basis of administration instead of the hitherto constantly shifting ground.

The volume gives all the Acts of Parliament relating to National Health Insurance in full, including not only the Insurance Acts but also parts of the Finance Acts of 1911 and 1912, the Government War Obligations Act, 1915, the War Loan (Supplementary Provisions) Act, and the Local Government (Emergency Powers) Act, so far as these relate to insurance. Convenient footnotes are given under the proper sections of the principal Act of 1911, showing the effects of amendments by later Acts. Next follow tables of regulations and orders made by the Joint Committee and the four bodies of Commissioners, and in part 3 is given the text of all the regulations now in force throughout the kingdom. Where the regulations issued by the four bodies of Commissioners are substantially in the same form, only one of the four regulations is given, any variations in the other three being shown in footnotes, but where substantial differences occur, as for example, between the medical regulations for England and those for Scotland, both are printed in full. The regulations are grouped under thirteen different heads, according to the subject dealt with or the administrative body concerned. Part 4 contains the orders relating to health insurance, and is arranged in the same manner as the regulations. In each case notes, cross references, and references to subsequent amending orders are given, and the parts of the United Kingdom to which each regulation or order applies are shown in heavy type at the head of each page. The volume will undoubtedly be warmly welcomed by all engaged in any branch of administration of the Acts, who have often been in doubt as to whether later modifications of the regulations might not be overlooked. It will not serve as a complete guide to the working of insurance, as it does not contain many of the rules which are in force—for example, a careful search fails to reveal the important rules of medical certification—but so far as it goes the book will certainly, as Mr. Charles Roberts hopes, supply a real want, and it is to be desired that the proposal to re-issue it from time to time in order to keep it up to date will be carried out. It is to be noted that though it only professes to give the regulations and orders in force on September 30th, it gives in full the new medical regulations for 1917, without any amendment such as suggested by the conference of Panel Committees.

NOTES ON BOOKS.

Drs. J. and P. Fiolle have brought together into a small compass a summary or outline of the treatment required by modern gunshot wounds.[4] The book is designed to be the stay and support of the young surgeon confronted with the complex horrors of the wounds produced in the trenches. It contains eighteen chapters, each devoted to trauma of some special part of the body, or to special forms of infection, such as gas gangrene and tetanus. It is clearly written, and contains the fruits of an obviously wide experience, gained in the trenches, dressing stations, casualty clearing hospitals, and hospitals at the base. It is stated in Professor Jacob's preface that one of the authors was killed early in July while dressing a wounded man in an advance. The book may be cordially recommended on its merits to the attention of all who have to deal with wounded soldiers, whether at the front or at home. It is thoroughly practical.

First Aid for the Trenches,[5] by Captain Hastings, R.A.M.C.(T.F.), gives a short and concise account of what to do in cases of emergency—wounds, fractures, unconsciousness, burns, and the like—arising in the trenches. It is well written, but noticeable chiefly for the excellence and artistry of the numerous photographs with which it is illustrated; they could hardly be better. The book is meant for the layman, and may be recommended.

In *Efficiency in First Aid*,[6] Dr. N. C. Fletcher has attempted to provide senior students of first aid to the injured with a reasoned account of what it is they are trying to learn and how they should set about learning it. His motto is "efficiency," and the five chapters of his manual show how students may attain this in study, diagnosis, treatment, and before the examiners. Without doubt the book should be of great service in the training of those for whom it is designed. It will teach them to think before they act. With this little volume the publishers issue a folded paper entitled *Home Nursing in Few Words*, wherein are summarized the rudiments of nursing. In this folder the proteins are called "proteids," and the carbohydrates are called "hydrocarbons."

[4] *Précis-résumé de chirurgie de guerre.* Par J. Fiolle et P. Fiolle; préface de M. le Prof. Jacob. Paris: F. Alcan. 1916. (Cr. 8vo, pp. 152. Fr. 2.)

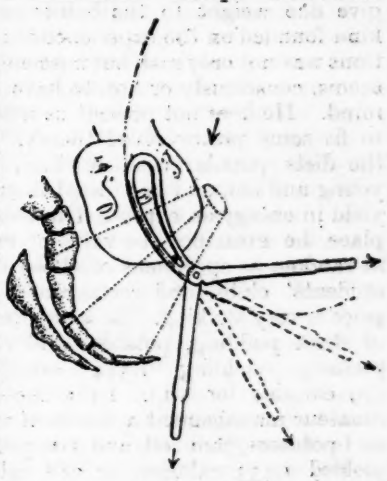
[5] *First Aid for the Trenches: Some Simple Instructions for Saving Life that Every Soldier Should Know.* By S. Hastings, M.S.Lond., F.R.C.S.Eng., Captain, R.A.M.C.(T.F.). London: J. Murray. 1916. (16mo, pp. 63; 38 figures. 1s. net.)

[6] *Efficiency in First Aid: A Manual of Aids for Senior Students of First Aid.* By N. Corbet Fletcher, B.A., M.B., B.C.Cantab., M.R.C.S., L.R.C.P.Lond.; together with a folder, *Home Nursing in Few Words*, by J. M. Carvell M.R.C.S., L.S.A.Lond. London: J. Bale, Sons, and Danielsson, Ltd. 1916. (16mo, pp. 200; 1s. net; Folder 3 × 4½, 2d.; cloth 4d.)

MEDICAL AND SURGICAL APPLIANCES.

Midwifery Forceps with Mobile Blade.

Dr. Charles A. Beck (Barton-on-Humber) has designed a forceps in which the cephalic portion of the blades become mobile by turning a key placed at the bottom of each handle. By this arrangement one or both can instantly be either fixed or liberated. In the high operation, a rigid forceps, when seizing an asynclitically placed head at the brim, will tend to pull it down in this position at the expense of much unnecessary force. Mobile blades, in such cases, favour a gradual correction which the uterine contractions are endeavouring to establish. Tarnier's axis-tractor forceps with their jointed lever arrangement enabled the fixed blades to rotate whilst traction was employed. This freedom of the forceps to follow the movements of the head constituted the great advantage of his instrument. The present forceps, with their mobile blades, will favour a natural rotation in practically any line of traction; the blades when free will automatically adapt themselves to the sacral curve. By the fixation or liberation of one or other blade with light traction an occipito-posterior or mento-posterior position may be made to rotate anteriorly. To sum up, the advantages are:



1. The movable blades allow the head to mould and adjust itself to the larger pelvic diameters of the parturient canal without the resistance of the ordinary fixed forceps.
2. Traction need only be a straight pull—not necessarily backward (in high operations)—hence no undue stretching of the perineum and lacerating of the soft parts.
3. By the liberation of one or other blades, the head in an O.P. or M.P. position may be made to rotate anteriorly.
4. They combine the advantages of an axis-tractor without the complicated lever mechanism and its difficult application.
5. The blades can rarely slip—even when faulty traction is applied.

The instrument is well and strongly made by Messrs. Weiss and Son; the whole fixation mechanism can be instantly removed for sterilization by liberating the screw. All sharp corners and edges have been rounded off.

On October 7th a bust of Dr. Emile Reymond was added to the Galerie des Bustes of the French Senate. Reymond was surgeon to the hospital of Nanterre and Senator for the Loire. He was said to have had a greater influence than any other man on the development of military aviation in France. He found a hero's death in making a reconnaissance in Lorraine at the beginning of the war. The bust is from the chisel of Alfred Boucher.

British Medical Journal.

SATURDAY, NOVEMBER 11TH, 1916.

DIET AND WORK.

THE Health of Munition Workers Committee is continuing to issue memorandums which, when next some enterprising author sets to work to compile a handbook on diet and work, will provide him with an easily-worked mine of highly practical, soundly scientific, and, for the most part, novel material. It has just issued an account[1] of an investigation of workers' food and suggestions as to diet, by Professor Leonard Hill. As might be expected from its authorship, it is one of the most informing; not only is it full of facts carefully ascertained and recorded, but in spite of the circumstance that it contains many tables which at first sight may repel, it is written in a most interesting and suggestive way. Food reformers of various kinds are never tired of telling us what to eat and what to avoid. They usually demand that we should make radical alterations in our customary diet, but the late Sir William Roberts, who was a very wise physician, more than once observed that not to give due weight to the habits and customs of mankind founded on the experience of unnumbered generations was not only rash but unscientific. Professor Hill seems, consciously or not, to have had this advice in mind. He does not present us with model diets made to fit some preconceived theory. He has examined the diets popular with workers, male and female, young and old, and has tested them primarily by their yield in energy as expressed in calories. In the first place, he examined the value of certain meals, taken at random as specimens of those served in canteens, students' clubs, and restaurants. The difference in price is very striking. In a popular restaurant a meal of steak pudding, potatoes and cabbage, and syrup pudding, yielding 1,344 calories, cost 1s. 5d. (79 calories for 1d.). In a factory canteen under amateur management a dinner of steak pudding, peas, and potatoes, jam roll, and rice pudding, cost 5d., and yielded 1,433 calories, or 288 calories for 1d. The cheap 5d. meal was not made cheap by cutting down the protein, for it actually contained over 10 per cent. more protein than the meal that cost 1s. 5d.; moreover, it contained the same amount of fat and rather more carbohydrate. Such a result must give the domestic housekeeper much food for thought. Taking the canteen dinners generally, it appeared that they were good, yielding an energy value of about 1,000 calories, well distributed among the amounts of protein, fat, and carbohydrate. Inspection showed that meat, vegetables, and pudding were made of good materials and well cooked. The meals brought in by workers were also examined, and were found to vary a good deal more than the canteen meals. One man who brought rabbit and vegetables in a basin got only 683 calories; another man who brought sausage roll, bread-and-butter and ham, and cheese, got 1,448 calories; and a boy aged about 15 got 1,719 calories out of a dish of potatoes, tomatoes, and bacon, a jam puff, a cake, bread-and-butter and jam; but, as Dr. Hill hints, while this meal illustrates the effect of growth and work in producing appetite, the boy was probably over-eating himself if his other meals were on the same scale. The food of women workers was, on the whole, less satisfactory than that of men and boys, and the yield in calories was probably, in most cases, insufficient. A restaurant meal of roast mutton, potatoes, cabbage, and syrup roll, yielded 687 calories and cost 6d.; another in a teashop, consisting of a roll, butter, milk, sugar, stewed prunes, and syrup, yielded 397 calories, and cost 7d. A meal, brought from home, of roast pork, Yorkshire pudding, potatoes and cabbage, yielded 590 calories; but another, consisting of roast beef, potatoes, cabbage, and haricot beans, yielded only 295. Whether deficiencies in the meal taken during the working period are made up by more liberal meals at home, or whether these meals are also deficient, could not be ascertained, but, says Dr. Hill, "even if the home meals are more liberal the distribution of the day's eating is on the wrong lines." He considers that in a long day's work there should be a good meal in the longest break if the efficiency of the worker is to be maintained for months and years. Experience, he says, "indicates that for a large class of workers home meals are hurried, and, especially for women workers, too often consist of white bread and boiled tea. A worker starting the day with a bread and tea breakfast, and walking or travelling for an hour or more to work, cannot remain for long an efficient worker," and he thinks it probable that much broken time and illness arise from this cause. He accepts the estimate of numerous investigators that the energy required by a man engaged in fairly light munition work is about 3,500 calories of food as purchased, but where calculations are based, as in his report, on food as eaten, the minimum canteen diet should be taken to be about 3,000 calories, although for a man engaged in a sedentary occupation as little as 2,200 may suffice. An investigation was made of the diet supplied at a well-managed hostel where each worker might eat as much as he or she desired. Four meals were supplied—breakfast, dinner, tea, and supper. Bacon or sausage, or both, were served at breakfast, either meat or fish at dinner, and either meat or ham, and cheese at supper. The calorie values varied between 3,847 and 3,913. This should satisfy the requirements of factory workers unless very heavy work is being done, and could perhaps be reduced somewhat if facilities for getting extra food were afforded to any one who wanted more. Five sample daily dietaries are suggested, yielding from 2,956 to 3,252 calories. Any one of them would seem to most town livers an ample dietary; thus that which yielded the lowest number of calories consisted of a sausage and a rasher of bacon, with two slices of bread, sugar and milk, for breakfast; roast beef, potatoes, peas, and currant pudding for dinner; two slices of bread, butter, and jam, sugar, milk, and a piece of cake for tea; and two slices of bread-and-butter, ham, and cheese, for supper. It is interesting to note how Professor Hill distributes his calories during the day. In three of his five diets the largest number is provided for midday dinner, the yield being 1,346, 1,102, and 1,003 respectively. In the two others the yield provided from breakfast is a little higher than that from dinner. In all diets the yield from supper is lower than that for dinner, and in all but two lower than that for breakfast.

The memorandum contains some general observations; it is, for instance, pointed out that for the relief of monotony an important factor is a change in surroundings during the meal, while a short walk before partaking of it may be desirable. For these

[1] Health of Munition Workers Committee. Memorandum 11. Investigation of Workers' Food and Suggestions as to Dietary. By Leonard Hill, M.B., F.R.S. H.M. Stationery Office. Cd. 8370. Price 1½d.)

reasons, and also because it is important to ventilate the workshop so that the air may be fresh when the workers return, the custom of eating meals within the workshop should be discontinued, and all food taken in a canteen, restaurant, or in the open air. The importance of fatigue in causing indigestion is also touched upon. Fatigue, it is said, prevents the proper digestion of food, and one of the earliest symptoms of overwork is some form of digestive derangement. Further, since nervous energy is required to control the work of the digestive organs, nervous fatigue, as well as physical fatigue, is followed by digestive disturbance. Thus some persons will benefit more from a brief rest, physical as well as nervous, before a meal than from a short walk. Food, it is added, should be taken regularly and not hurriedly, and the energy so taken should be distributed fairly evenly over the day in the manner indicated in the model dietaries referred to above. In this way strength is maintained and the digestion at no time overloaded. One more remark may be noted: it is that "food should not be taken between meals or at frequent intervals, because a good digestion depends upon a keen appetite."

STATE PROVISION FOR THE TREATMENT OF VENEREAL DISEASE IN SCOTLAND.

Under date of October 25th there has been issued by the Local Government Board for Scotland a Memorandum and Regulations entitled "The Public Health (Venereal Diseases) Regulations (Scotland), 1916."[1] The document is addressed "to all local authorities in Scotland and to all others whom it may concern." The significance of this mode of address will appear later. There is much in it.

The corresponding regulations and circular for England and Wales were issued under date of July 12th last, and the documents were summarized and criticized in the issue of the Journal of July 22nd. Comparing the two sets of documents it will be found that there is a close agreement in the form which the orders take. The Scottish regulations require every local authority to prepare and submit for approval a scheme (*a*) for enabling any medical practitioner in the area to obtain, at the cost of the local authority, a scientific report on any material submitted from a patient suspected to be suffering from venereal disease; (*b*) for the treatment at and in hospitals or other institutions or in their homes of persons suffering from venereal disease; (*c*) for placing at the disposal of medical practitioners such skilled assistance in the treatment of venereal diseases as may be required; and (*d*) for supplying medical practitioners with salvarsan or its "substitutes" or other drugs for the treatment and prevention of venereal disease.

In the Memorandum it is made plain that the work is to be done so far as is possible in existing institutions; and it is written: "In the negotiations with the managers of a hospital or other medical institution it should be made clear that, subject to the fulfilment of essential conditions, neither the local authority nor the Local Government Board desire to interfere with the internal administration of the hospital or other institution." To the cost of approved schemes the central authority will make grants amounting to 75 per cent. of the local authority's approved net outlays under the scheme.

These provisions are on all fours with those made in the English regulations. But when we come to read the directions issued in the Scottish Memorandum for the initiation of the schemes in each locality we find a divergence, and the change is all to the good. That there is this difference must stand to the credit of the British Medical Association, and the impression that the action of this Association has made on the central authorities.

Before the English scheme was issued the Association interviewed the officers of the English Local Government Board to urge on the Board the primary necessity for engaging the active sympathy of the local medical profession in all parts of the country with the scheme. That sympathy, the Association maintained, could only be secured by enlisting the participation of the medical practitioners in the formation of the local schemes. The Board ignored these representations. The English documents were addresses to the "councils of counties and county boroughs, governing bodies of hospitals, and boards of guardians," and throughout the documents there was no word of direction to the local authorities to ascertain the views of the local practitioners on the practicability of any tentative arrangements they might formulate. The Council of the Association insisted on the necessity for medical representation or collaboration with the local public health committees. The Representative Meeting of July endorsed this view and sent a deputation to the President of the Local Government Board, with the result that a supplementary circular[2] was isssued by that Board advising local authorities to invite the assistance of local medical representatives in the formation of schemes. The issue of that circular was a feather in the cap of the Association, particularly as it acknowledged by name the origin of the representation on which it was made. But the Scottish documents are a veritable triumph for the principles advocated by the Association, for the full tale of the demands made upon the central authority are incorporated in the Scottish directions to the local authorities. Section III, "Approval of Schemes" (page 5) reads: "Before approving a scheme the Board must be satisfied on the following points. . . . (*d*) That the medical officer of health, in framing a scheme for submission to his local authority, has taken the best available means to confer with the medical opinion of the district. (*e*) That, in order to secure the support and co-operation of the medical profession, the local authority, through their medical officer of health, have submitted their proposed scheme for the observations of the medical schools and colleges, the Local Medical Committee under the National Insurance Acts, and any other medical organizations operative in the district. The submission of a draft scheme in this way to the various branches of the medical profession will enable the local authority to make the technical details of the scheme known to all branches of the medical profession, and at the same time to obtain practical suggestions for the working of the scheme. In submitting the scheme for the Board's approval the local authority should also submit any suggestions and criticisms made by the medical authorities concerned."

Here at last the central authority has recognized that the success or failure of this great scheme must rest on the assistance of the medical practitioners. For this reason, if for no other, the Scottish documents are wisely addressed to "All whom it may concern." Alas, that the English authority was so unimaginative as to be unable to judge the situation, or so timid that it dared not grasp a difficulty boldly

[1] H.M. Stationery Office, 23, Forth Street, Edinburgh.

[2] Supplement, September 2nd, p. 77.

and direct the local authorities in the way they should go!

We can be sure that in Scotland the local profession will do all in its power to further the aims of the Government. In England there is still much room for improvement. Local authorities go their several ways: a few have asked for representatives of local medical bodies to assist them in the constructive work; others have nominated medical men to assist them—good men, let it be said, but they do not assist as representatives of their colleagues; for the most part, however, any co-operation such as is needed in this great work is lacking. Let us hope that when local schemes come up to the central authority for England for approval the spirit of these Scottish directions will be acted upon, so that no scheme will be approved unless and until there is evidence that the general body of the profession has been able to examine the proposals and give their help in their shaping.

The success of this really bold attempt to grapple with these scourges of humanity can be assured if the whole-hearted sympathy of the medical profession be enlisted from the beginning. That active good-will is to be had for the asking.

MEDICAL WAR ARRANGEMENTS IN INDIA.

SOME of our contemporaries appear to be puzzled to understand the respective duties of the Director-General of the Indian Medical Service and of the Director of Medical Services in India, the latter an office hitherto always held by an officer of the British Army Medical Service, although the regulations do not necessarily require that this should be the case. The Director-General of the Indian Medical Service is essentially a civil surgeon-general, who has only an indirect relation to military arrangements in the field. Practically his duties in this respect are confined to calling up the military medical reserve from civil employment and supplying the military medical authorities with the drugs and certain parts of the equipment they ask for. With regard to drugs and equipment, he has to see that the medical store dépôts in India are kept full and to appoint medical storekeepers. These store dépôts supply the civil hospitals in India, but must also be prepared to meet any military emergency. The personnel he must supply in response to the demand of the military are officers of the Indian Medical Service drawn from civil employment, and the war reserve of military assistant surgeons and sub-assistant surgeons; he must also take measures to recruit temporary medical men from civil for military work, and must keep up the cadres of the Indian Medical Service, the military assistant surgeons and the sub-assistant surgeons. The Director of Medical Services, India, is directly responsible for the Army Bearer Corps, consisting of Indians of all castes, except sweepers; and the Army Hospital Corps, for station hospitals for British troops, made up of sweepers, cooks, dhobis (laundrymen), and bhistis (water carriers). The divisional medical stores and medical stores for station and regimental hospitals he obtains from the Director-General, Indian Medical Service. The ambulance tongas, hospital clothing, petty supplies, and menials for mobilized hospitals, Indian troops, he obtains from the supply and transport department. His tentage he must get from the ordnance, and furniture from the military works department. These complicated arrangements do not seem to be ideal, and it may be that the Mesopotamia Statutory Commission now sitting will make recommendations on this head with a view to simplifying the method now followed as it has been settled between the War Office and the Government of India. The Secretary of State for War told the House of Commons recently that the War Office was now responsible for all arrangements, including those for supply and the treatment and transport of the wounded in Mesopotamia. Earlier in the war the Indian Government had, we believe, four military general hospitals in this country, and there is a suspicion that they might have been more fully employed had they been sent last year to Mesopotamia, where there was a dire need for them, or to Egypt or Africa. At that time several other hospitals had been established in this country, staffed by retired members of the Indian Medical Service, which provided a large number of beds and every facility for treatment of native Indian soldiers.

THE WAR OFFICE AND THE DISABLED SOLDIER.

THE question of what should be done for the disabled soldiers is still undecided. The Prime Minister announced a fortnight ago that it was the intention of the Government to set up a Pensions Board with a Cabinet Minister at its head. On November 8th he stated that this Minister would be Mr. Arthur Henderson, and that it was hoped to introduce the bill to give effect to the Government's policy very soon. On the previous day the War Minister had stated in the House of Commons that before coming to a decision with regard to the treatment of the disabled soldier he was awaiting the result of an investigation by "a very competent person," who was examining the whole of the matter with a view to practical suggestions being put forward. In the meanwhile the number of disabled men steadily increases. Some of them are so slightly disabled that there is good reason to hope that by surgical or medical means they may, after a reasonable period in a command dépôt or convalescent camp, be restored to the army again in some capacity. But there are a great many, constituting probably the majority of those in military hospitals at home, who require prolonged treatment, surgical or medical, and in their case there can be no certainty that they will be again available in any capacity for military service, although there may be a reasonable certainty that if their treatment is completed many of them may become useful members of the community. The army, owing to the foresight of Sir Alfred Keogh, has provided admirable hospitals for orthopaedic, heart, and nervous cases, where these men can be nursed and trained back to health; but constantly hanging over their heads is the possibility that at some date determined not necessarily by their physical conditions and their progress towards recovery, but by the demand for hospital accommodation for new cases, they may be discharged from the army with a pension which may serve to keep them out of the workhouse, but without the benefit of any definite organization charged with the duty of completing their medical or surgical treatment and training them to a trade. The matter is engaging, as is known, the anxious consideration of the War Office and also of the Cabinet. The Secretary of State for War received a deputation on November 3rd, representing the Central Pensions Statutory Committee, the medical profession, and the Unionist War Committee. The spokesmen were Mr. Astor for the Unionist War Committee, Mr. Cyril Jackson for the pension authorities, and Dr. Verrall, chairman of the Central Medical War Committee, and Sir Clifford Allbutt, president of the British Medical Association, for the medical profession. No official report of the conversation which took place has been issued, and it may be concluded that the War Minister was not then in a position to make any definite statement. On November 8th the Labour party adopted a resolution calling on the War Office to retain disabled soldiers until all that medical and surgical science could

do for them had been done, and to begin their training in suitable trades in collaboration with the Statutory Pensions Committee before their discharge from the army. The War Office, from its point of view, is perhaps not unnaturally indisposed to retain in the army and under military discipline men who can in all probability never again be of service to it; but the army owes a great debt to these men and to the nation—a debt which it can never discharge by sending them out of the army at the earliest moment that may suit its convenience. Sir Alfred Keogh said the other day that he felt sure that the resources of the army, which were very large, would all be placed at the disposal of the discharged soldier for as long as might be necessary, just as if he were a serving soldier. We think that the scheme then outlined by Sir Alfred Keogh may be taken to mean that the Army Medical Department is willing to grant to men who have been discharged the advantage of treatment at the military orthopaedic and other hospitals as out-patients. Any such scheme will encounter a good many administrative difficulties, and remembering the enormous amount of work that already has to be done by the Medical Department of the War Office, it seems clear that it will be necessary to establish a separate section of that department for dealing with this matter. The Army Medical Service has shown itself supremely competent to meet every call made upon it by the war, and for this purpose has appealed and has received the assistance of the civil medical profession and also of the Indian Medical Service. We cannot think that these resources are exhausted; on the contrary, there is good reason to believe that there are now available members of the medical profession of long experience in medical administration who have had many opportunities of proving their ability in organizing medical relief for the sick and wounded. As at present advised, we can see no reason for selecting any person who does not possess this experience, and in particular we think that a matter, the medical side of which is paramount, should not be placed in the hands of any official who has not had medical training and experience. In selecting an officer for the head of this department, should it be constituted, it would not be necessary to discriminate between officers of the Army Medical Service and the Indian Medical Service. Both have responded with equal zeal to the demand the war has made, and both should at the present time be looked upon as one service when the needs of the nation have to be met.

DISCIPLINE IN MILITARY CONVALESCENT HOSPITALS.

ONE of the objections that have been made to retaining under military control disabled men still needing treatment is that there is "no discipline in military hospitals." As this surprising statement appears to be gaining credence we would point out that it is quite inaccurate. There may be instances in which discipline has been allowed to become lax, but this is a defect for which the commanding officer should be blamed. It is no more difficult to enforce discipline in a military hospital or convalescent camp than in any other military unit, and it is habitually enforced. In a paper published recently[1] Lieutenant-Colonel Netterville Barron, M.V.O., R.A.M.C., in speaking of discipline in a military convalescent hospital, says that the utmost possible freedom may be allowed to all ranks, and as the actual training is over by the dinner hour, they may have the afternoons and evenings to themselves "provided the discipline is good." In the military convalescent hospital which he describes "if a man be brought up before the officer in charge he is reverted to hospital rules, which means that he cannot leave camp," and it is added that there has been practically no trouble with discipline. The four essentials of physical training are, he says, pleasure in the training, exercise, balance, and rest. The last means mental and physical relaxation, and during compulsory hours, between réveille and dinner time, should be taken under orders. The men, when first admitted, are put into divisions of 500 each for administrative purposes; they are then examined by the medical officers and posted to a section. In the first section the worst cases are placed—those likely to require six or more weeks' training; in the second section, cases which, although in better health, will yet take a month or six weeks to train; in the third section, men requiring only three or four weeks' training; and in the fourth, men who are practically well, but not hard. At the periodical medical examinations a man may be moved from one section to another, and he cannot be discharged to furlough until he has passed through section 4. The sections are divided into subsections commanded by patient N.C.O.s; the sections are commanded by staff N.C.O.s. Patients requiring massage or electrical treatment are not advanced beyond section 2 until the treatment has ceased to be necessary. All efforts are directed to producing a hard and fit man in the shortest possible time. This, it is stated, is best done by gradually but rapidly increasing the speed of his work, omitting apparatus work altogether, and reducing the amount of time spent on route marching. Provided the feet are properly hardened, a man trained on this system will, it is said, always outlast the ordinary marcher. Very special care is given to the feet and to the detection of any tendency to flat-foot, which is particularly liable to begin while convalescent from frostbite or rheumatism. It is pointed out that a man who has been bedridden while recovering from any disease or from wounds is very prone to develop flat-foot when he gets up. Skipping exercises in shoes are found to strengthen the arch, and boys should not be exercised in stockinged or bare feet, nor should running barefooted on the sands after sea-bathing be allowed. Cases of trench feet are required to attend daily at the central dressing station, where the feet are thoroughly dried, and rubbed with a lotion consisting of equal parts of belladonna liniment and tincture of iodine. Dry socks are then put on, and the men are directed to dry their socks frequently. For patients too old for very fast work special subsections are formed.

[1] *Journal of the Royal Army Medical Corps*, October, 1916.

DISCHARGED SOLDIERS AND INSURANCE.

THE Insurance Commissioners have issued a leaflet addressed to discharged soldiers who have been insured during their service. In the term "discharged soldier" is included men transferred to the Army Reserve or Territorial Force Reserve. The leaflet points out that a soldier who has been insured in the army is, subject to certain conditions, entitled after his discharge, provided he remains insured under the Acts, to medical and sanatorium benefit. He is entitled to sickness and maternity benefit if he has been insured for 26 weeks and has paid 26 weekly contributions, but does not become entitled to disablement benefit until he has been insured for 104 weeks and paid 104 weekly contributions. The soldier should receive on discharge certificate Army Form O 1845 (buff postcard), which is a certificate showing that he was insured in the army and stating the period of his service. If he does not receive it he should at once apply for it to the officer by whom he was last paid—the paymaster of the soldier if discharged; the company commander if transferred to the reserve. If benefit is urgently required before the receipt of the discharge postcard O 1845, he should take his army discharge certificate (B 2079), or certificate of transfer to the reserve, to the office of the Local Insurance Committee, and, if a member of an approved society, should also take his discharge certificate or certificate of transfer to the local representative of his society. A discharged soldier who is a member of an approved society should complete and sign O 1845 and forward it to the secretary or local agent of his approved society, and he should ask the secretary or agent

for a contribution card, and arrange for a medical card to be sent him at once. On receipt of the medical card he should take it to the panel doctor from whom he wishes to receive treatment when he is ill. If not a member of an approved society he should complete O 1845 and send it to the Insurance Commissioners, Maida Hill, London, W. If discharged from the army on account of wounds, sickness or disease, he will become a member of the Navy and Army Insurance Fund, but if discharged on account of some minor ailment, he may be required, as a condition of continued membership of the fund, to satisfy the Commissioners that his health would prevent him from obtaining admission to an approved society. The Commissioners will then send him an insurance book and arrange for the issue to him of a medical card, which he should at once take to the panel doctor from whom he wishes to receive treatment in case of illness. If discharged from the army otherwise than on account of wounds, sickness or disease, he should at once apply to an approved society for admission as a member. A man who is granted a pension for total disablement will, as a condition attaching to the pension, have his normal rate of sickness benefit reduced by 5s. a week, and will not be entitled to disablement benefit. No reduction is made in the case of a partial disablement pension, or of pensions other than those granted in consequence of the present war. Medical, sanatorium, and maternity benefits are not affected by the receipt of a total disablement pension. The regulations apply to Ireland, except so far as medical benefit is concerned.

TREATMENT OF TETANUS.

THE memorandum prepared by the War Office Committee for the Study of Tetanus (published at p. 647) will be read with much interest by medical practitioners, and more especially that part of it in which curative treatment by tetanus antitoxin is discussed. It has not hitherto been easy to form a sound opinion upon the value of tetanus antitoxin as a therapeutic agent as distinct from its well-recognized use as a preventive measure, and the profession will, we believe, generally be grateful for the guidance afforded in the memorandum. It emphasizes the great importance of allowing as short a time as possible to elapse between the diagnosis of the presence of the infection in any case and the commencement of active treatment. It follows from this that early diagnosis is essential. The memorandum points out that spastic rigidity of the wounded limb is probably the earliest symptom, but those who have to deal with cases are asked to note carefully any concomitant symptoms, since if these are carefully recorded and studied, further help towards an early diagnosis may be obtained. It is advised that at the very earliest stage treatment by intrathecal injection of large doses of antitoxic serum should be at once begun. If 20 c.cm. of cerebro-spinal fluid is the amount withdrawn by lumbar puncture, then the injection of 20 c.cm. of serum of ordinary strength will give the patient a dose of some 3,000 units, but by using a serum of higher potency as large a dose as 16,000 units may thus be given; at the same time 5,000 to 10,000 units may be injected intramuscularly. The advantage of intramuscular injection over subcutaneous injection is that whereas the serum in the latter case is absorbed very slowly, probably not completely until the end of forty-eight hours, by the intramuscular route it is believed that the whole is absorbed in about twelve hours. The intrathecal injections should be repeated daily for three to five days, and should be supplemented by intramuscular injections; finally, when the disease shows distinct signs of abating, the serum may be given subcutaneously. Of carbolic acid it is said that there is no convincing evidence that it has any curative effect, and of treatment by magnesium sulphate that not only has it no effect upon the disease itself, but has risks of its own which are far from negligible.

AN ANTITYPHUS SERUM.

TYPHUS FEVER is due to a living virus that can be transmitted from one experimental animal to another, but cannot yet be grown on any artificial culture medium or in the test tube. It has been known for some time that the serum of human beings or experimental animals that have survived a recent attack of typhus fever will protect other experimental animals against inoculations with the virus. Such serums, however, have no curative action. Drs. C. Nicolle and L. Blaizot have published an article[1] in which they detail the success with which they have prepared an effective antityphus serum—or experimental anti-exanthematic serum as they prefer to call it—that has a definitely curative action when injected into human beings suffering from typhus exanthematicus. The serum is derived from two animals, a horse and an ass, that have been immunized against the virus of typhus by a long course of intravenous injections of first the leucocytes and later of the pounded spleen and suprarenal glands of guinea-pigs experimentally infected with the disease. The other tissues of the guinea-pigs could not be used for the purpose, as it was found that their injection gave rise to signs of anaphylaxis. The ass was immunized by a series of 114 of these injections in fourteen months, the horse by a series of ninety-one in the course of about ten months. All the immunizing injections were tolerated well. Two viruses were employed—one from Algiers, the other from Morocco. They have been propagated by passage from one guinea-pig to another for more than two years at the Pasteur Institute in Tunis. Drs. Nicolle and Blaizot found that their antityphus serum when injected into either Chinese bonnet monkeys or guinea-pigs exercised both a preventive and a curative action when the animals were infected with the virus of typhus. They have accordingly applied their serum to the treatment of human beings with typhus fever. Up to the present time Dr. Potel has treated with it thirty-one patients at Sidi Abdallah, and Dr. Poirson seven at Medjez el Bab. Twenty-two of the patients were French, nine Tunisians, and seven Serbians. Only one of the thirty-eight died, a tuberculous Frenchman, who was convalescent from typhus but succumbed to a series of abscesses resulting from injections of camphorated oil. No general statistics of the mortality of the disease in similar patients not treated by the new antityphus serum are given, but it is noted that Dr. Potel had two deaths out of three French patients treated for typhus before the serum came to hand. Dr. Potel gives an account of the general effects of the serum; he finds that it lowers the pyrexia and makes it irregular, that it may cut the pyrexial period short (as in six out of thirty-one cases), that it lessens the severity of the nervous symptoms (delirium, stupor) very considerably, that it improves the patient's general condition very much, and that it lessens the frequency of the complications so common in typhus. Dr. Potel advises that the antityphoid serum should be exhibited as early in the disease as possible. From 10 to 20 c.cm. should be injected hypodermically every day until the fever is at an end. The patient should meanwhile receive a copious fluid diet, stimulants, and cardiac tonics. Dr. Poirson comes to very similar conclusions as to the efficacy of the serum; the temperature charts of all the patients are reproduced, with brief clinical details in each case. In every instance the louse was believed to have been the agent of infection. It is notorious that the mortality of typhus fever varies with such things as the season of the year, the period in the course of an epidemic of the disease, and the physical condition and, perhaps, the nationality of the patient. The new antityphus serum appears to have been in use from the middle of November, 1915, to the middle of April, 1916—that is to say, at a season when the mortality of typhus fever is commonly high.[2] The results of the more extended use of Drs. Nicolle and Blaizot's

[1] *Annales de l'Institut Pasteur*, Paris, 1916, xxx, 446.
[2] See BRITISH MEDICAL JOURNAL, 1916, i, 621.

antityphus serum will be awaited with great interest by all who have to do with the disease; for the present it is enough to say that they appear to be highly promising.

ANTERIOR POLIOMYELITIS AND THE RAT.

In the British Medical Journal of October 14th, p. 532, reference was made to a theory recently propounded by Dr. Mark W. Richardson of Boston, formerly secretary of the Massachusetts State Board of Health, that anterior poliomyelitis is transmitted through the agency of the rat flea. The Women's Municipal League of Boston has started a scheme for the destruction of rats in that city. It proposes to form "rat clubs," the members of which will be instructed by competent ratcatchers in the best methods of extermination. In this work the league has the hearty support of the mayor and the co-operation of the City Board of Health. Whether Dr. Richardson's theory be true or not, it is certain that these destructive vermin are in many ways a menace to the health of the community and a danger to buildings. It is said on their behalf that they are efficient scavengers; but there are other means of keeping a city clean, and there can be no doubt that the rat population might be kept down with great advantage. The number of cases of anterior poliomyelitis reported in New York for the week ending October 8th was 80. On that date there were 1,537 patients with the disease in the hospitals of the city. A report issued by the Department of Health of the City of New York shows that the total number of suspected cases put under quarantine by the Board up to October 17th was 9,209; of these 250 were found not to be cases of poliomyelitis, leaving a total of 8,927 true cases. The total number of deaths recorded by the department was 2,362, a fatality of 26.24 per cent. From August 21st to October 13th 2,058 cases were discharged from the hospitals of the department; of these 66 per cent. showed evidences of paralysis of some degree; in 18 per cent. paralysis had wholly disappeared, and in 15 per cent. no paralysis had been manifested. Of 2,715 cases followed up in the patients' homes, it was found that 1,885 had serious paralysis of one or both lower limbs and were unable to walk; 530 more were partially paralysed in the lower limbs, although still able to walk; 273 had one or both arms totally paralysed.

FEES OF PHYSICIANS AND SURGEONS.

We have received from Sir Ronald Ross, chairman of the British Science Guild, a note of its recent activities. Among them was the consideration of a letter written by the late Sir Lauder Brunton shortly before his death. It contained the following paragraphs: "The whole question of the remuneration of the medical profession and of its various branches will naturally give rise to much discussion. For example, I have of late years frequently been consulted in regard to abdominal operations. The question, Shall an operation be performed or not? has been left entirely in my hands, and on the correctness of my answer the life of the patient has depended. Yet for my advice I received the fee of three guineas. If an operation was necessary the surgeon received 100 guineas. This enormous disproportion between the values of mere mechanical skill and trained brain work holds in other branches also. These high surgical fees are one of the causes why some kind of co-operative hospital is becoming urgently needed. Before the war began I was working with Lady Henry at the establishment of some kind of insurance for officers' families against sickness or operation. The officer himself was insured, but if one of his family got appendicitis the operation and incidental expenses might run away with the united income of the officer and his wife for a whole year." The chairman of the British Science Guild invites correspondence on this subject addressed to him at 199, Piccadilly, London, W.

PRISONERS OF WAR IN SWITZERLAND.

The *Revue des Deux Mondes* for September 1st contains an article by the well known Swiss writer who signs herself "Noëlle Roger" on French prisoners interned in Switzerland. The repatriated civilians and the *grands blessés* on their way through Switzerland told the familiar tale of the miseries of the German camps and of the sufferings of the wounded in the early days of the war. During the first winter the conditions in the camp were very bad. The Belgians and French from the occupied territory received no parcels. The famished Russians raked up with their hands soup spilt in the mud, and scraped disgusting garbage out of refuse heaps. They were so weak from hunger that they fell down when at work, and some of them died where they fell. In the reprisals camp things were still worse. Again, we have the French testifying that the Germans were less brutal to them than they were to the British. A pregnant hint is conveyed in the statement that the commandant, when he learnt that his son was a prisoner in France, changed his ways entirely. The prisoners are unanimous in declaring that there is now less misery in the camps than there was in the beginning. Organization is better, and hygiene is improved. Everywhere baths and douches have been installed. The plague of lice which caused so much suffering in the first year seems to be checked. These improvements were often due to visits from neutrals, especially Americans and Swiss. The feeling of pity aroused by these statements of the prisoners led to the proposal that those not hopelessly incurable should be interned in Switzerland. The Federal Council undertook negotiations with the belligerents. Thanks to the intervention of the Pope these were brought to a successful issue at the end of 1915, and on January 25th, 1916, the first convoy of French and Belgian sick reached Leysin. In the following weeks other convoys arrived at Leysin, Montana, Montreux, and at various places in the Oberland. The interned French, Belgian, and English are distributed in hotels according to nationality. In each they are under the command of an interned N.C.O., the *chef d'établissement*. All the establishments of a district are under the orders of a *chef de secteur*, who is responsible to the Swiss medical officer, and Colonel Hauser, Physician-in-Chief of the Swiss army, directs the whole service. In each place the prisoners are allowed to walk about within a radius of several kilometres; beyond that limit a permit is necessary. A circulating library has been established, and lectures are to be delivered in the winter. Interned students are admitted to the universities. Colonel Hauser recommends the establishment of bright and comfortable club rooms, where soldiers from the different hotels may meet and read, and where non-alcoholic drinks are supplied at the lowest prices. Those sufficiently recovered can, if they wish, find work in the fields and in gardening. At Leysin four workshops have been opened, where men do light work, such as toy-making, two hours a day. The first batch of British prisoners arrived at Zürich on May 29th, and one party went to Chateau d'Oex, where, according to Twells Brex (*Daily Mail*, October 25th), the senior officer has established workshops for carpentry, tailoring, bookbinding, and basket-making, while several men find employment in the local sawmills and electric light works. A school has also been established where French, geography, arithmetic, and history are taught, but there is still need for a club house with provision for amusement for the men during the long winter evenings.

TREATMENT OF BRITISH PRISONERS OF WAR.

The Government Committee on the Treatment by the Enemy of British Prisoners of War was appointed by the Home Office in September, 1915, to collect, verify, and record information as to the treatment of British subjects, military or civil, who have been prisoners in the hands of

the enemy. The members of the Committee, which includes representatives of the War Office, Foreign Office, and Home Office, and has its head quarters at the Office of Works, Storey's Gate, S.W., are Mr. Justice Younger (Chairman), Sir Louis Mallet, G.C.M.G., Sir Reginald Acland, K.C., Colonel Anstruther, Mr. Percy Lubbock, Adeline Duchess of Bedford, Mrs. Pope Hennessy, and Mrs. Darley Livingstone (Honorary Secretary). Facilities are given to the Committee for the collection of information as to the prison camps in enemy countries, and from that information reports are compiled from time to time. Evidence is obtained in order that material may be available from which, after the war, a complete history of the treatment of British soldiers and civilians by the enemy during the war may be prepared. Meanwhile the Committee aims at improving the lot of the prisoners by keeping the Government Departments informed of their condition so far as it is known, in order that, when it is thought fit, representations may be addressed to the German Government through the good offices of the United States. In reply to a question in the House of Commons on November 7th, the Government spokesman, Mr. James Hope, renewed the expression of the deep debt of gratitude of this country to the United States Ambassador at Berlin, Mr. Gerard, and his staff, for the admirable work they had done. The approximate number of official reports on visits of inspection by United States representatives to internment camps in Germany received during the current year was, Mr. Hope said, 200, including reports on parent camps, working camps, and hospitals.

Medical Notes in Parliament.

War.

Volunteers: Medical Arrangements.—The Financial Secretary to the War Office stated, in reply to Mr. Hogge, on November 1st, that a scheme for the formation of a medical service as part of the volunteer organization had been prepared and would, he hoped, be published very soon, but certain details remained to be settled.

Army Medical Corps (Silver Badge).—On November 1st Mr. Watt asked the Secretary of State for War whether the silver war badge for service is refused to medical men who have served for a year or over in the Royal Army Medical Corps if they have not relinquished their commissions on account of old age, or physical infirmity arising from wounds, or sickness caused by military service; whether he was aware that this regulation worked out unfairly to many medical men who had left the service only on the urgent call of duty to the civilian population; and whether he would alter the regulation accordingly. Mr. Forster replied: "The silver badge was introduced specifically for distinguishing those who, having served with His Majesty's forces since August 4th, 1914, have relinquished their commissions or appointments, or have been discharged on account of age, wounds, or sickness. It is not a commemorative medal for service during the war. If a medal is granted for the present war, the claims of those persons whom the honourable member mentions will be considered with all others who have served in the war."

Army Dental Treatment.—Mr. Forster, in a written answer on November 2nd, said that there were no fixed regular scales of dental personnel or equipment laid down for the army. Provision for dental treatment had been made, and all demands had been met. The equipment had been standardized with the advice of dental experts.

Medical Appeal Boards.—In reply to a question by Mr. Anderson as to the number of medical appeal boards set up, the Financial Secretary to the War Office said that one special medical board had been set up in London. Men who, after being passed fit for service by a recruiting medical board, considered that they had not received fair treatment, could produce evidence to that effect before the tribunal. If the tribunal considered that the man had not been correctly classified by the recruiting medical board, and the case went to the special medical board in London, arrangements were made for his travelling and subsistence during the period he was away from home. This arrangement applied to Scotland.

Discharged Soldiers (Infection).—In a written reply to Sir Charles Nicholson, on November 1st, the Financinl Secretary to the War Office said that no soldier was discharged (except for tuberculosis) into civil life while still in an infectious condition owing to any illness, and particularly any venereal disease. Such soldiers were retained under treatment until all danger of infection to others had passed.

Nerve-shattered Soldiers.—Colonel Yate asked, on November 7th, whether any steps had been taken by local committees acting under the Central War Pensions Statutory Committee to provide convalescent homes free from suspicion of connexion with lunacy to which ex-soldiers suffering from uncertifiable nerve strain might go temporarily. Mr. Hayes Fisher said that the Statutory Committee had been making inquiries into this difficult question, and had under consideration a scheme under which appropriate cases would be treated and trained in an institution or institutions in which cases of ordinary wounds or illness other than mental would also be received. He was anxious to bring the matter to a speedy termination, but there was a good deal of conflict of opinion as to the best treatment for these cases.

Doctors of Military Age (Ireland).—The Chief Secretary for Ireland, Mr. Duke, has stated in a written answer to Mr. Kilbride that the Local Government Board in Ireland had declined to sanction the appointment of Dr. M'Kenna to the position of temporary medical officer of the Monasterevan district, because he was of military age and was eligible for employment in the army. In the opinion of the Board the temporary arrangement made some time ago for the medical care of the district was both adequate and satisfactory.

Military Hospitals in Ireland.—In reply to a question on November 7th the War Minister said that the small military hospitals at Omagh, Enniskillen, Armagh, and Dundalk had been found unsuitable for the reception of sick and wounded from overseas, as they were not equipped for the purpose. They were only used for cases which did not require serious medical or surgical treatment. On the other hand, the county hospitals had experienced surgeons and suitable staff, and had expressed a desire to receive sick and wounded from overseas. All parties had much appreciated the new arrangement and the scheme was working very satisfactorily at a lessened annual cost to the State. The authority to decide questions of opening or closing hospitals was the General Officer Commanding-in-Chief, Irish Command.

Allowance to Widowed Mother. — On the motion for the adjournment, on November 1st, Mr. Pringle called attention to the fact that under existing regulations the widowed mother of an undergraduate who had enlisted and was killed was not entitled to a dependant's pension, whereas, had her son at the same age been engaged in some remunerative occupation, she would have been entitled. The difference is due to the theory of pre-war dependency, the undergraduate not being in a position to make any contribution towards the family expenses. It might, he pointed out, have been supposed that the Statutory Pensions Committee could have remedied this injustice, but it appeared that in the case of a soldier who died in Mesopotamia it was unable to make any grant. The Financial Secretary to the War Office replied that the matter had been settled by the House itself, and the War Office could do nothing unless the House itself made an alteration in a state of affairs which he did not believe it ever intended to bring about.

Men and Dependants not Eligible for Pensions.—Mr. Finney, on November 1st, called attention by a question to the fact that there were circumstances in which certain soldiers and sailors who had been discharged as medically unfit, and the dependants of men who had died after joining the forces, were not in receipt of any amount from the Government, and that in many such cases soldiers and sailors or their dependants were becoming chargeable to the Poor Law, their application for pensions having been refused. Mr. Finney further suggested that the support of such cases should not be a local charge, but that as the men were examined and passed as fit by a medical board, and died or became incapacitated in the country's service, the responsibility for the support of such men or their dependants should be a charge on the National Exchequer. The Prime Minister replied that the matter was receiving most careful attention.

Milk Supply.—Mr. MacCallum Scott asked, on November 1st, whether the advisability had been considered of prohibiting the sale of milk until it had been cooled or refrigerated, by which means towns could get their supply once daily, instead of twice or thrice, thus obviating the necessity for excessively early hours and leading to economy in working expenses. Mr. Long said that the Milk and Dairies (Consolidation) Act, 1915, enabled the Local Government Board to make orders regulating the cooling, conveyance, and distribution of milk intended for sale for human consumption, but the operation of the Act had been suspended in consequence of the war. In a large number of cases cooling was now practised, and the possibility of taking further action would be considered.

Income Tax Abatement.—An odd point was raised by Mr. Crooks in the House of Commons, on November 2nd, when he asked whether a man assessed for income tax can claim a reduction in respect of an artificial hand which enables him to earn his taxable income, and which costs him £14 a year for upkeep. The Financial Secretary to the Treasury did not specifically answer the question, contenting himself by stating that, under the Income Tax Acts, allowance was only made for expenses incurred wholly and exclusively for the purposes of the employment. The implication would appear to be that, as a man would use his artificial hand for other purposes than his employment, he would not be able to claim an allowance.

THE WAR.

GAS GANGRENE.

We are glad to welcome as an interesting and informative contribution to the literature of war surgery a monograph on gas gangrene by Dr. Fr. Guermonprez.[1] Dr. Guermonprez, Professor of Therapeutics at Lille, who is acting as a surgeon-major in the French Army Medical Service at Calais, has had much experience of this dread complication of wounds since the beginning of the war, and seems to be thoroughly conversant with all the communications of his compatriots on the subject. He is able to bring a discriminating judgement on the various conflicting views of wound treatment, and on the controversies which have been as acute among French as among English surgeons and investigators. In the four little volumes comprising the monograph most of the matter is quoted from other writers, and much valuable material is brought together that would otherwise be lost to the ordinary medical officer, who, owing to the exigencies of military service, cannot have access to the numerous papers that have been written. The author seldom obtrudes his own views, but works out from paper to paper the advancement of our knowledge on the subject.

Although the complication of gas gangrene was one of the great surprises of this war to all the combatant armies, a calamity before which modern surgery, tutored in the simplicity of asepticism, was at first well-nigh impotent, yet it was, under other names, as old as the hills. The former generations knew it, or at least one of its forms, as hospital gangrene. Ambroise Paré, in the sixteenth century, knew it well and laid down principles for its treatment that can be copied with advantage even to-day. In wars of modern times it has not bulked large owing to the difference of conditions. We had been too much inclined, perhaps, to regard an infection as the result of some single "specific" organism, forgetting that many infective processes identical clinically may be due to different causal agencies, and conversely that the same bacterium produces various clinical manifestations. Dr. Guermonprez insists strongly on the point that in military surgery it is necessary to treat a wound on broad lines in advance of, and frequently without the aid of, the pathologist.

Gas gangrene is not a simple infection due to one organism. It is not frank in its onset, nor unvarying in its behaviour. It is most often sudden, unexpected, rapid, and calamitous. It appears under protean forms. We all recognize now that its prevalence was due to the conditions of trench warfare. The soil through which the trenches run, manured for intensive cultivation and polluted by the necessity of continuous occupation, clings to the clothing of the soldier, and is carried by the shrapnel fragments into the lacerated soft tissues. Here is a favourable medium for the propagation of bacteria. The necrotic and stunned tissues are unable to react to the invader, and the infection goes on apace. Two fundamental ideas have to be established—first, that we have to deal in all cases with a polymicrobic invasion consisting of aërobes as well as anaërobes, showing itself in a clinically polymorphous infection; and, secondly, that the development of the disease is favoured and the virulence of each infecting agent is exaggerated by the association of several. Some observers, indeed, have held that gas gangrene is a specific infection, a special disease characterized by a collection of local and general symptoms always the same, though developing differently according as the causal organism is the *Vibrion septique* or the *Bacillus perfringens*. The other organisms which are almost invariably found in association are supposed by these authors to play but a secondary part. There is a school in France, led by Delbet, which from the results of pyoculture claims to be able to say when immediate amputation should be done, and when conservative measures should be adopted. In Germany, Fraenkel gives a method whereby one may differentiate a diseased condition due to what most Germans call Fraenkel's organism (really Pasteur's) from a clinically identical condition of better prognosis, but the procedure takes at least sixteen hours, and Dr. Guermonprez points out that these precious hours may determine a fatal issue. The general consensus of opinion is that no one organism can be held as specific; at one time it is *B. perfringens*, at another *Vibrion septique;* perhaps, too, Vincent's fusiform bacillus, the *B. coli*, and many more, but generally it is a microbic association—a syndicate of bacteria—that causes the trouble. Not much is to be gained by bacteriological studies as far as treatment is concerned, and all shrapnel wounds are to be looked upon as potential foci of gas gangrene.

Some cases show gangrene without gas formation, and some give gas without gangrene. The emphysema may travel very rapidly by the connective or muscular tissues, and is certainly in advance of the bronze erysipelas which is an evidence of subcutaneous necrosis.

As regards the period of incubation, Professor Guermonprez considers that the graver forms start twenty-four to forty-eight hours after the wound, whilst the slow forms begin on the fourth day. Beyond that again there are some cases with a long latent period, apt to be ignored, and exploding very late when the daily change of dressings is discontinued. The symptoms of onset vary from case to case; the only subjective symptom that arrests attention is a great fear on the patient's part of surgical interference. Sometimes there are violent pains in the affected limb, and the neighbourhood of the wound becomes swollen. The temperature is not usually high, the pulse is raised above 100. A yellowish-brown, bronze, greenish, or greyish colour with mottling shows on the surface, and there is frequently oedema. The presence of gas can be detected by the finger. There are signs of a general septicaemia, and the conditions may spread with alarming rapidity. Not infrequently quite localized forms are met with. Many divisions and subdivisions of the conditions have been made, and a comprehensive description of the signs is impossible. When it is in full course the diagnosis is no longer in doubt, and more or less heroic measures have to be taken to combat it. The rapidity of evacuation of wounded from the trenches to the bases, and the early change of dressings, have much diminished the incidence of the disease.

When a limb is infected, amputation will generally have to be done—either under the guidance of pyocultural results or on account of the rapid spread of the condition, and the rules are, roughly, to amputate through perfectly healthy tissues some distance above the visible limits of invasion, the tourniquet being avoided if possible. Many local treatments have been tried with varying degrees of success, and these are set forth in the book. The results of Carrel's method of employing Dakin's hypochlorite solution are discussed at length. It does not seem to meet with universal praise amongst French surgeons. Dressings with iron perchloride, quinine hydrochloride, ether, camphor, and many other substances, have, in the hands of some, given good results. Dr. Guermonprez is favourably impressed with the results of alum compresses, and especially with the use of saturated ethereal solutions of camphor, and advocates a more extended trial. A review of this monograph must fail to give an indication of the wide range of observations recorded—so diverse and yet so closely associated—but the book ought to be in the hands of every one interested in the treatment of wounds in general and in gas gangrene in particular.

[1] *Gangrene Gazeuse Pendant la Guerre de 1914-1916.* Par Fr. Guermonprez, Prof. et médecin-major. Tomes I–IV; 2me édition. Refondue. Paris: J. Russet. 1916. (Post 8vo, pp. 299, 312, 380, 416.)

CASUALTIES IN THE MEDICAL SERVICES.

ARMY.

Killed in Action.

Captain G. V. Bogle, N.Z.A.M.C.

Captain Gilbert Vere Bogle, New Zealand Army Medical Corps, whose death in action was recorded in our issue of October 7th, was the second son of Mr. and Mrs. James Kennedy Bogle of Hawkes Bay, New Zealand. He was educated at the Napier High School, where he took several scholarships, and later at Victoria College, New Zealand University, where he graduated. He was a leader in all athletic sports, and captain of the college Rugby football team. He studied medicine at Edinburgh University, where he graduated with distinction in 1912, and yet

found time to gain his blue at Rugby football, athletics, and cricket. He also represented Edinburgh in the Scottish University sports. In the vacations he went into training as a territorial, and got his commission as an artillery officer in the O.T.C. Returning to New Zealand in 1913 he began practice as a doctor in Waipuhuzau. Early in 1915 he volunteered for military service, and became medical officer of the 1st Battalion of Lord Liverpool's Regiment, now the 3rd Rifle Brigade, New Zealand Division. Captain Bogle married, in August, 1915, Margaret Richmond Fell, second daughter of Dr. Walter Fell, Captain R.A.M.C., and Mrs. Fell, and granddaughter of the late Mr. Justice Richmond, of the Supreme Court of New Zealand. In October of the same year he left with his regiment for Egypt, where he was on active service at Mersa Matruh during the Senussi rising. In April, 1916, he was moved with his regiment to the Somme front. When the New Zealand division attacked on September 15th, Captain Bogle set up his regimental aid post in a depression close behind Flers, and there he worked under heavy shell fire continuously for forty-eight hours; on September 17th, while at work with his wounded, he was struck by a shell and killed instantaneously. His fellow officers speak of his loss as irreparable. From the day he joined his regiment up to the time of his death the comfort and well-being of his men was his one absorbing thought. To his men he was a real friend, trusted and beloved and appealed to in every difficulty. No day's work was ever too long for him, no duty was ever irksome. Where all men were heroes, his courage shone conspicuously. One of his fellow officers who had often played football with him, wrote this of him: "He was a very fine player, and was the mainstay of our backs, besides captaining the team. He was one of the finest gentlemen and one of the fairest and cleanest players that it has ever been my good fortune to meet. His name is added to that long, long list of brave men who have given their lives that our homes might be safe." Major Bell, 1st N.Z.R.B., writes of him: "His capable and untiring work, his patience, and his invariable cheerfulness have been the admiration of us all. He always seemed so absolutely part of the battalion—in the mess, on the march, and in the field—and was always so helpful to everybody, that there is no one who could be so missed by officers or men."

Captain B. J. L. Fayle, R.A.M.C.

Captain Barcroft Joseph Leech Fayle, R.A.M.C., was reported as killed in action in the casualty list published on November 2nd. He was educated at Cambridge, where he graduated as B.A., and at the University of Bristol, and took the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1913. He entered the R.A.M.C. as lieutenant on July 31st, 1914, and was promoted to captain on March 30th, 1915.

Captain F. Hitchcock, N.Z.A.M.C.

Captain F. Hitchcock, New Zealand Army Medical Corps, reported as killed in action in the casualty list published on November 4th, had previously been reported as wounded in the list of October 30th.

Captain T. C. Kidner, R.A.M.C.

Captain Thomas Clatworthy Kidner, R.A.M.C., was reported as killed in action in the casualty list published on November 4th. He was educated at Middlesex Hospital and at the Royal Dental Hospital, London, took the L.D S. diploma of the Royal College of Surgeons, England, in 1912, and those of M.R.C.S. and L.R.C.P.Lond. in 1914. He was in practice at Stoke Holy Cross, Norwich, before the war. He joined the Special Reserve of the R.A.M.C. as lieutenant on August 21st, 1914, and was promoted to captain six months later. He was attached to the Middlesex Regiment.

Lieutenant W. C. E. Bower, R.A.M.C.

Lieutenant William Charles Ernest Bower, R.A.M.C., was killed in action on October 20th. He was educated at University College Hospital, London, took the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1900, had recently taken a temporary commission in the R.A.M.C., and was attached to the Newfoundland Regiment when killed.

Lieutenant S. A. Walker, R.A.M.C.

Lieutenant Stanley Arthur Walker, R.A.M.C. (temporary), whose death in action we announced in our issue of October 28th, was born in 1899, and was a graduate of the University of Toronto. He was transferred from the Canadian Army Medical Corps to the Royal Army Medical Corps on November 23rd, 1915.

Died of Wounds.

Captain H. Mathewson, R.A.M.C.

Captain Hamilton Mathewson, R.A.M.C., is reported to have died of wounds received in action at the age of 35. He was the son of the late Mr. A. Mathewson, of Newtown-Stewart, co. Tyrone. He took the degrees of M.B., B.Ch., B.A.O. of Queen's University, Belfast, in 1910, and had held the office of assistant medical officer of the Portsmouth Infirmary. He joined the R.A.M.C. as a temporary lieutenant in September, 1915, and went abroad shortly after as medical officer of a battalion of the Yorkshire Regiment, and was subsequently transferred to the Northampton Regiment. He was promoted to captain after a year's service. Captain Mathewson was slightly wounded about six weeks ago and again severely on October 23rd.

Captain M. J. Rees, R.A.M.C.

Captain Morgan James Rees, R.A.M.C., died on October 30th, aged 41, of wounds received on October 22nd, while attending to the wounded under fire. He was the younger son of the late John Rees, of Stepney, and was educated at the City of London School, at the University College of Wales, Aberystwyth, and at Guy's Hospital. He took the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1902, the D.P.H. of the London Colleges in 1904, the degrees of M.B.Lond. in 1902, and M.D. in State Medicine in 1906. After filling the posts of assistant medical officer of the Brook Hospital of the Metropolitan Asylums Board, and assistant medical officer of health to the county borough of Reading, he became medical officer of health and superintendent of the isolation hospital for Aberdare urban district in 1906, and in 1911 was appointed one of the medical inspectors of the Local Government Board. He was a Fellow of the Society of Medical Officers of Health, and of the Royal Society of Medicine, and a member of the Royal Sanitary Institute. He took a temporary commission in the R.A.M.C. a little over a year ago.

Died on Service.

Lieutenant-Colonel E. Hudson, I.M.S.

Lieutenant-Colonel Ernest Hudson, Bengal Medical Service, died at Allahabad on October 14th, aged 57. He was born on April 9th, 1859, the youngest son of Henry Lambard Hudson, late of Harleston, Norfolk; was educated at University College, London, and took the diplomas of M.R.C.S. and L.S.A. in 1882, and the F.R.C.S. Eng. in 1886. He entered the I.M.S. on April 1st, 1886, as surgeon, becoming surgeon-major on April 1st, 1898, lieutenant-colonel on April 1st, 1906, and being placed on the selected list on April 7th, 1911. He served on the north east frontier of India in the Chin-Lushai campaign of 1889–90, when he was mentioned in dispatches in G.C.O. No. 677 of 1890, and received the medal with a clasp; and on the north-west frontier, in the Chitral campaign of 1895, when he took part in the action of the Malakand Pass, and in the relief of Chitral, receiving the medal with a clasp. Most of his service, however, had been spent in the gaol department of the United Provinces, and at the time of his death he was superintendent of the Naini central prison at Allahabad.

Lieutenant F. Whitaker, R.A.M.C.

Lieutenant Frederick Whitaker, R.A.M.C., who died of dysentery at Alexandria on October 28th, was the second son of Mr. Joseph Whitaker, J.P., of Halifax. He was born in 1874, and was educated at Rugby and Trinity College, Cambridge, whence he proceeded to St. Bartholomew's Hospital. He graduated M.B., B.C.Camb. in 1903, and took the diplomas of M.R.C.S., L.R.C.P.Lond. in the same year. In 1897 he represented Cambridge successfully against Oxford in the featherweights, and acted as cox for his hospital. He rendered invaluable service as house-surgeon to the Halifax Infirmary from 1903 to 1906, after which he was appointed

one of the honorary surgeons to that institution. He confined his practice to consultative and operative surgery. His skill as a surgeon and his genial and kindly disposition earned for him the high esteem of his professional brethren as well as of the public. He responded to the appeal of the army although over 41 years of age, and received his commission as temporary lieutenant on October 18th, 1915. He became one of the surgeons of the 29th Hospital at Salonica, where he did important work. He did not enjoy robust health, but had unbounded energy for work, and this may have rendered him a more easy prey to that scourge of the East—dysentery, which has claimed so many victims. He married in 1909 Jessie Milroy of Glenluce, Wigtownshire.

Wounded.

Captain K. Burgess, R.A.M.C. (temporary).
Captain G. L. Jones, R.A.M.C. (temporary).
Captain H. B. Low, R.A.M.C.(T.F.).
Captain J. M. Mackenzie, M.C., R.A.M.C. (temporary).
Captain A. E. Quine, R.A.M.C. (temporary).
Lieutenant G. MacI. Dale, R.A.M.C. (temporary).
Lieutenant R. Younger, R.A.M.C. (temporary).

Deaths among Sons of Medical Men.

Atkinson, Guy Cheselden Reuell, Second Lieutenant East Lancs Regiment, aged 26, elder son of Dr. T. Reuell Atkinson, of Chadwell Heath, died on October 30th of wounds received on October 24th. He was educated at Chigwell School, and soon after leaving school he went to British Columbia, acquired a little land, and there built himself a house. On the outbreak of war he boarded up his shanty and started off for home and enlisted with his younger brother in the 18th Battalion Royal Fusiliers, U.P.S. They were sent to France and served all last winter in the trenches. He rose to the rank of corporal, and in the spring of this year was sent home for a commission. After some months at Balliol College, Oxford, he was gazetted with his brother to the East Lancs Regiment, and at the end of September he was once more sent out to France. Whilst taking a trench he was severely wounded in thighs and buttocks, and died, after five days, of gas gangrene, having had two operations performed on him.

Banks, Charles James, Private Seaforth Highlanders, eldest son of Major Banks, R.A.M.C., of the Head Quarters Staff, Cairo, killed October 12th.

Blair, H. S. Penney, Lieutenant Duke of Cornwall's Light Infantry, elder son of Charles Blair, F.R.C.S., of Richmond, died of wounds recently, aged 26. He was educated at Cambridge, where he had graduated B.A.

Chessall, Arthur Roland H., London Regiment, second son of the late Dr. Chessall, of Horley, Sussex, killed October 7th, aged 28.

Davidson, Ralph I. M., Lieutenant Manchester Regiment, son of the late Colonel Davidson, I.M.S., died on October 24th of wounds inflicted the day before. He was educated at Temple Grove School and at Cheltenham College, entered the army as second lieutenant at the beginning of the war, and joined his battalion at Cairo in October, 1914, on their way from India to France. He had been previously wounded in November, 1914.

Girling, Charles John, Second Lieutenant Hampshire Regiment, elder son of Dr. Girling, of Cranborne, near Salisbury, killed October 23rd, aged 19.

Greathead, John Rivers, Second Lieutenant Rifle Brigade, sixth son of the late Dr. J. B. Greathead, of Grahamstown, South Africa, killed October 23rd, aged 21.

Maclean, D. Fitzroy, Second Lieutenant, only child of the late Dugald Maclean, M.B., died recently of wounds received on July 23rd, aged 28.

Spreat, L. H., Lieutenant Royal Horse Artillery, son of Dr. Spreat, of Oakleigh Park, London, N., died of wounds recently, aged 19.

Medical Students.

Maxwell, Henry, Second Lieutenant Cheshire Regiment, killed in action in October. He was the younger son of T. Henry Maxwell, LL.D., B.L., of Mount Street Crescent, Dublin, and before the war was a second year medical student at Trinity College, Dublin, where he was in the O.T.C. His commission was dated November 16th, 1914. His elder brother is a surgeon in the Royal Navy.

Montgomery, Edward Henry, Second Lieutenant R.F.A., whose death in action in France we announced last week, was a second year medical student in Trinity College, Dublin. He was the only son of Dr. Edward Hugh Montgomery, of Mallow, co. Cork, who is at present on active service abrcad.

Lemass, Herbert Justin, Second Lieutenant Royal Dublin Fusiliers, who was killed in action in France on October 23rd, was a second year medical student in Trinity College, Dublin. He was a son of Dr. P. E. Lemass, I.S.O., of Monkstown, co. Dublin. He was only 19 years of age and joined the army through the Royal Military College, Sandhurst. An elder brother, who is a barrister-at-law, holds a commission in the A.S.C. and is on service in France.

NOTES.

Honours.

The *London Gazette* of November 2nd announces that the King has been pleased to confer the following honours on officers of the R.A.M.C. in recognition of their distinguished service and devotion to duty during the epidemic of typhus at Gardelegen Prisoners of War Camp, in Germany, during the spring and summer of 1915, under circumstances related in the British Medical Journal of November 20th, 1915, p. 737, and November 4th, 1916, p. 623.

C.M.G.

Major Philip Claude Tresilian Davy, R.A.M.C.

D.S.O.

Captain Augustus Scott Williams, R.A.M.C.
Captain Arthur James Brown, R.A.M.C. (S.R.).

Croix de Guerre.

The French Army has awarded the Croix de Guerre to A. Louise McIlroy, M.D., D.Sc., for her work as médecin-chef in the Scottish Women's Hospital formerly at Troyes, France; later, with the Armée d'Orient in Serbia; and now in Salonica. General Ruotte visited the hospital in Salonica and pinned it on "as a recognition of the work done for the French army."

Mentioned in Dispatches.

In printing the names of the medical officers mentioned in the dispatches from General Sir Archibald Murray, Commander-in-Chief, Egyptian Expeditionary Force, published in the *London Gazette* of September 25th (Journal, September 30th, p. 472), the following were accidentally omitted: Colonel D. O'Sullivan, A.M.S., Captain M. O. Wilson, R.A.M.C., Temporary Captain R. H. Makgill, R.A.M.C. (since relinquished his commission), Temporary Captain L. L. Satow.

French Sanitary Squads.

It would appear that the French army has not hitherto had sanitary squads to attend to the hygiene of the front lines and the cantonments in the rear. These are now to be established, and the men comprising them are to receive theoretical and practical instruction in the cleansing of clothes, the disinfection of *fosses d'aisance*, the destruction of flies and mosquitos, the incineration of refuse, and the purification of drinking water. Each member of a squad must specialize in one of these matters, so as to be able to direct the work of fatigue parties.

England and Wales.

Maternity Institute for Cardiff Hospital.

The President of the Local Government Board visited Cardiff on November 3rd, and was the principal speaker at the ceremony of laying the foundation stone of a new chapel and maternity department for King Edward VII Hospital. Colonel Bruce Vaughan, chairman of the hospital, stated that during the last fifteen years the hospital had been trebled in respect of the number of its beds, income, and invested capital. It was now engaged in adding another 150 beds to its ordinary accommodation, and 89 beds for maternity cases and child welfare in addition to the wards which Mrs. Nixon had so generously given. A gift of £10,000 by Commander Sir Edward Nicholl, R.N.R., would furnish 32 surgical beds, including 8 for tuberculosis. An orthopaedic department had been founded, and a gift by Mr. Charles Radcliffe would provide another 14 beds in the children's department. It was estimated that the buildings would cost £120,000, of which £80,000 had already been subscribed or promised. The latest and most generous promise of £50,000 was made in response to the appeal for a nursing home and maternity hospital. Mr. Walter Long spoke of the importance of the further development of maternity and child welfare centres, and dwelt on the work hospitals could do, not only for the cure of disease, but for its prevention. He regretted that the whole of the care of public health of young and old alike was not in the hands of one great Government department, and he hoped to see the time when such an alteration would be made as to render the Local Government Board the great single public health authority of the country. The public knew that the medical profession had given, and was prepared to give, its labour without fee or reward, and that it was constantly studying every new feature, looking back into the past and trying to anticipate the difficulties of to-morrow. Mrs. Nixon's benefaction would provide a young woman in the early days of her married life with skilled attention, splendid surroundings, and the devoted attendance of the nurses, to whom the public could never express one tithe of its gratitude.

In proposing a vote of thanks to Mr. Long, Commander Sir Edward Nicholl said that after a conversation with Major Ewen Maclean he had promised to give £50,000 to erect a building for maternity and child welfare. Major Ewen Maclean, in seconding the resolution, said that of the large number of deaths in childbirth, half were due to puerperal fever, a preventable disease. Cardiff had been backward in not having made provision for maternity work, but now had an opportunity of inaugurating a scheme which might well be the first in the country. Mr. Long, in acknowledging the adoption of the resolution, proposed a vote of thanks to Mrs. Nixon. In acknowledging a vote of thanks to him Colonel Bruce Vaughan announced a number of other subscriptions.

Position of Special Venereal Hospitals.

The report presented to the biennial meeting of the Manchester and Salford Lock Hospital stated that the future of the hos ital entirely depended on the nature of the scheme for the treatment of venereal diseases which was being prepared by the city council. There were only four similar hospitals in the kingdom — Manchester, London, Dublin, and Glasgow—and as no mention was made of them in the recent Local Government Board circulars, it was uncertain whether they would receive any subsidy, such as the 75 per cent. of the cost which the Government promised to county and county borough councils. Apparently the Local Government Board was rather in favour of treatment at general hospitals, where it was thought patients could attend with less risk of publicity. The report showed that during the last four years there had been a regular increase in the number of women out-patients. While the number of men out-patients varied between 4,700 and 4,900, the number of women out-patients had increased from 1,206 in 1912 to 1,732 last year.

The Refreshment House Experiment in Carlisle.

Mr. Edgar C. Sanders, general manager of the Central Control Board (Liquor Traffic) scheme for Carlisle, made a report to the local committee last week. He said that the operations of the Board in Carlisle practically commenced on July 1st. On July 12th the Gretna Tavern was pened, and six public-houses were closed. At the Gretna Tavern, in addition to food and non-intoxicants, beer and stout only were sold. The consumption of food and non-intoxicants increased steadily for many weeks, and the receipts from this source represented over 60 per cent. of the total trade, which was very large. The policy of acquiring licensed premises was begun on July 24th, and there now remained only six in Carlisle which had not been dealt with. The taking over implied that all private interests in the sale of intoxicants terminated. Only five licences now remained in Carlisle, and negotiations were pending with regard to two of them. With regard to the others—two hotels and one restaurant—the Board did not intend to take any action at present. In nearly all cases in which licensed premises had been taken over the former licensees had become the salaried managers under the Board. They had no interest in the sale of intoxicants, but were encouraged to provide food and to push its sale, together with all non-intoxicants. In some houses a percentage of the gross receipts from food was allowed to the managers; in others the whole of the profits would go to them. Strict instruction had been given that all restrictions ordered by the Central Control Board were to be scrupulously observed, and although it was difficult for licensees and their assistants to enforce their observance Mr. Sanders belie ed that in every house they were now implicitly carried out. The businesses of wine and spirit merchants in Carlisle had been acquired and were being conducted on behalf of the Board, several of the previous proprietors having been retained. It was the policy of the Board to comply with the public demand for all classes of goods which the public were in the habit of obtaining before the Board began its work. The joint use of premises for the sale of groceries and intoxicants had been discontinued, and the off-sale of spirits would be limited to seventeen licensed premises. The Board had also acquired the four breweries in Carlisle; two of them had been discontinued, and in the other two the greater part of the beer required in Carlisle and in the country houses formerly owned or tied to Carlisle breweries was being brewed by the Board. One of the breweries which had been discontinued had been converted into a hostel for men employed on the reconstruction schemes, while the other was used for bottling. The reconstruction schemes included the conversion of a club into a place similar to, but smaller than, the Gretna Tavern, and large alterations in certain licensed premises were in hand. The Board was also taking over the supply and sale of intoxicants at the four refreshment rooms at Carlisle station, while the Caledonian Railway Company was conducting the sale of food and non-intoxicants. At Longtown, in the Gretna area, one inn was being reconstructed and another was being converted into a coffee-house. The net result was that there were now ninety-two licensed premises, including the Gretna Tavern, controlled and managed in Carlisle city and sixteen in Longtown; twenty licensed premises had been extinguished in Carlisle and three in Longtown. The Board was now directing its attention to the country houses in the direct controlled area surrounding Carlisle, and the ownership of several had become vested in the Board in connexion with their purchase of Carlisle breweries. The report was accepted by the committee, and it was decided to make arrangements to keep open certain public-houses in the centre of the city all the afternoon for the sale of food and non-intoxicants.

The National Association of Insurance Committees.

The annual meeting of the National Association of Insurance Committees was held in London on October 19th and 20th. The President, Mr. Alderman Huddart, in his opening address, expressed the opinion that the relations of the association with the Commissioners had so much improved that any suggestions made would be sure to receive due attention. There were now 104 Insurance Committees associated out of a total of 130. Speaking of medical benefit, he considered that it would be greatly improved by the schemes for consultants and specialists, but if the present system was to continue it would have to be strengthened. On the whole, he believed the panel doctors had done their work well, though there was a residuum whose services had not been satisfactory. The profession had responded loyally to the country's call, and he was not up against those doctors, but he was up against those who had practices in congested areas many of whom made money the first consideration. Patients seldom utilized the machinery for dealing with complaints, but submitted without complaint to bad habits and neglect on the part of their doctors. He thought the medical system would be greatly strengthened by effective supervision and by limiting the numbers that a doctor could take on his list. This could be carried out by inspectors, who should be empowered to visit the doctors' surgeries and inspect their records. Where records were badly kept or prescriptions badly written so as to be likely to cause mistakes in dispensing, or where waiting-room accommodation was bad, pressure should be brought on the doctors to remedy the defects on penalty of not participating in any grants. The system of inspection should also apply to the chemists. Sanatorium benefit in addition to the treatment of patients was intended as a preventive measure. Experience was showing that the great expectations of cure would have to be modified. A large percentage of early cases could be cured, but unfortunately few cases came under medical observation in the early stages. With regard to prevention it failed larg ly from insufficient funds. In Salford (where the president was chairman of the Health Committee of the Corporation as well as chairman of the Insurance Committee), £8,600 a year was being spent, which would be increased to £15,000 when the new sanatorium was completed, and last year the Insurance Committee contributed to this about £1,850, but an expenditure of at least two or three times the present amount was required to cover the whole field. Indirect measures, such as proper housing of the working classes, were even of greater importance than direct measures. In Salford, housing schemes were started in 1889, when the death-rate from phthisis was 23 per 10,000 population, and in the following twenty years, without any direct attack on the disease, the death-rate had decreased to 15 per 10,000. He believed, too, that the proper care of infants and young child life was a most important part of the campaign against tuberculosis.

Resolutions were passed urging on the London Government Board and the Commissioners the importance of measures for the after-care of tuberculous patients, and suggesting that the Government's proposals for small holdings or farm colonies for discharged soldiers offered aid for the solution of this problem. The authorities were also called on to deal with overcrowding and insanitary housing. The Conference welcomed the proposal that discharged soldiers should be provided with medical benefit to include specialist and consultant treatment, and recommended that there should be no difference in the medical treatment of discharged soldiers and the ordinary insured population, and that the supplementary grants recommended by the Government in 1914 for the provision of specialists and consultants for the insured should now be provided. It was resolved to compile data with regard to the medical facilities in each committee area, and a resolution was passed recommending that insured persons should not be disqualified for sickness or disablement benefit in respect of venereal disease if medical treatment could be efficiently rendered without abstention from work.

A paper was read by Alderman Hayhurst of Bradford on public health services and their relation to the National Insurance. Speaking generally, he said local authorities only dealt with the prevention of disease, but the more advanced authorities had extended their operations to the treatment of certain diseases. Bradford had a scheme for dealing with the whole of the population in the case of tuberculosis. It had also a maternity and child welfare scheme, an antenatal clinic and maternity home, an infant department which is responsible for treating some 600 babies under one year of age every week, a pre-school and post-school clinic, a municipal milk dépôt, and a scheme for the provision of meals for expectant and nursing mothers. He claimed that all these schemes would greatly affect the insured population of the future. He believed that the demand was now strong for a revision of all the health services of the country and for the appointment of a Minister of Health.

Ireland.

Several persons from the Clonlee district have been admitted to the Loughrea Workhouse Hospital suffering from typhus fever. Dr. J. F. Ryan, M.O., in his weekly report to the guardians, stated that the type of fever was very virulent.

Anterior Poliomyelitis in Ulster.

Sporadic cases of anterior poliomyelitis have occurred lately in the North of Ireland. No one district has shown any epidemic prevalence, but cases in twos and threes have been reported here and there. It is important that medical men should be on the look-out, as in some cases the onset of feverish symptoms has preceded the onset of paralysis by a period as long as a week.

Salaries of Medical Officers.

At a meeting of the Irish Committee of the British Medical Association, held at the Irish offices, 16, South Frederick Street, Dublin, on November 1st, a letter was read from the Local Government Board in reply to a resolution passed at a previous meeting of the committee urging on the Local Government Board that as the majority of unions in Ireland had adopted graded scales of salaries the Local Government Board should at once take the necessary steps to have all unions in Ireland brought into uniformity on the matter. The letter stated as follows:

> The Local Government Board desire to state that, notwithstanding the financial exigencies which have resulted from the war, they have sanctioned the scales of salaries which have been adopted by boards of guardians during the past two years, but, as pointed out in their letter of October 28th, 1914, the Board do not consider that it would be advisable at the present time to press the matter specially on boards of guardians.
>
> In regard to the appointment of substitutes to discharge the duties of dispensary medical officers while on vacation, the Local Government Board would point out that the appointment of temporary medical officers is vested in the boards of guardians. The guardians, however, select the practitioner nominated by the medical officer in almost every instance, and in any case where they do not do so the Local Government Board urge them to accept the medical officer's nominee, except where the arrangement suggested by the medical officer would be likely to lead to inconvenience to the sick poor.

The committee directed its secretary, Dr. Hennessy, to wait on the Medical Commissioner of the Local Government Board and to point out to him that there was never a time in Ireland when the ratepayers, who were practically all farmers, were in a better position, owing to the great agricultural prosperity, to improve the positions of their Poor Law medical officers, whose salaries were, in nearly all cases, less than the working expenses of their districts.

Scotland.

An *x*-ray motor ambulance has been presented, as a memorial of Miss Edith Cavell, to the Scottish Women's Hospitals for service with the Serbian army. Dr. Hope Fowler, at the ceremony of presentation, said that the car contained one of the best *x*-ray outfits he had seen. The tube is carried on a travelling carrier underneath the trestle; the switch-board is controlled by a pedal; electricity is obtained from a dynamo driven by the car's engine.

Miners and Doctors' Fees.

The miners of Fifeshire, Mid and East Lothian, Clackmannan, and Kinross have refused to accept the agreement reached by miners in other districts in the south of Scotland. Seventeen out of twenty branches in Mid and East Lothian have resolved to have no further dealing with the doctors through the colliery offices, but to establish a fund from which the accounts as rendered to the families direct by their medical attendant will be paid in future.

Manual Curative Workshops.

On October 30th King Manoel, continuing his tour of hospitals equipped with departments for orthopaedic treatment, inspected the Scottish National Red Cross Hospital at Glasgow. He was accompanied by Colonel Robert Jones of Liverpool, Major Stiles of Edinburgh, and Sir George T. Beatson. The structural work of the orthopaedic department is now approaching completion. The King was much impressed by the comprehensive nature of the preparations made for applying orthopaedic treatment. On October 31st His Majesty, accompanied by Colonel Jones and Major Stiles, visited the Bangour Military Hospital near Uphall. He was received by Surgeon-General J. C. Culling, D.D.M.S. Scottish Command, and Lieutenant-Colonel J. Keay, who is in charge of the hospital. After the inspection King Manoel expressed his appreciation of the arrangements, especially those for orthopaedic treatment.

Maternity Service and Child Welfare.

The national sacrifice of young adult life entailed by the war calls for the most scrupulous care of the oncoming generations, from birth upwards, in the immediate future. By the extension of the Notification of Births Act (1915) it has now been made incumbent upon local authorities to exercise the powers conferred upon them for the benefit of expectant as well as actual mothers and to watch over the welfare of young children up to the age of 5 years. They are empowered to work through local committees, and it is especially provided that such committees must include women and may also comprise persons who are not members of the local authority itself. Thus the machinery has been provided if the brains and the hands can be found to work it.

In an interesting report by Dr. A. K. Chalmers, Medical Officer of Health for Glasgow, issued in July last, the progress of the work as carried on in the great hive of industry on the Clyde is fully described and may well engage the attention of authorities in other large centres who may have this great responsibility thrust upon them. As a result of experience it has been found that many requirements can be met by existing machinery, but that others demand special arrangements not as yet perfected. The conclusions at which he has arrived seem to be somewhat as follows:

Dispensaries, where expectant mothers can obtain advice supplemented by home visitation, are very much

needed. They should be distributed over given areas and established in direct connexion with hospitals, so that skilled treatment can be promptly provided as soon as the need for it has been detected. The association of the great medical charities with this and other State schemes, such as those for dealing with tuberculosis and venereal diseases respectively, presents a problem which is very difficult of solution. Dr. Chalmers points out that "the dovetailing of rate-aided machinery into the administration of institutions conducted on a voluntary basis will require careful adjustment if the full benefit of voluntary contributions is to be maintained."

Home visitation, which must form an essential part of any scheme for the supervision of infant life, must be supplemented by some scheme for providing medical treatment for incipient disease. The importance of early recognition of the first departure from physiological health can hardly be exaggerated. The aid of the doctor, both for mother and infant, is too often delayed until irreparable mischief has been set up. The aim of all such welfare schemes must be essentially preventive rather than merely curative. Child-welfare institutes are needed in all industrial centres, and must be established on broad and liberal lines, rendering them at once effective and attractive. They should provide facilities for antenatal and infant consultations, day nurseries, playgrounds, and kindergartens on a large scale. Crèches have been set up in considerable numbers throughout the country, where young children can be taken care of during the absence of the mother working away from home. But it does not appear that mothers in large towns working only at home have been assisted in the same way with the care of their children during working hours.

The establishment of such institutes as those suggested would afford this much-needed relief, and would keep the children up to 5 years of age in decent surroundings and with proper infant instruction, instead of leaving them to be neglected and permitted too often to seek recreation in the gutter. Health visitors can render invaluable aid in such matters, but it is necessary that they should be trained for the work that they undertake. Qualification both in nursing and midwifery is desirable, and indeed essential, if the supervision of midwives forms a part of their duty. At the present time it should be noted that there is no such supervision in force, and this is an omission which should not be allowed to continue.

In Glasgow, as in all large communities, there must always be a number of distinct authorities—councils, boards, and committees—directly or indirectly concerned with the administration of a public Act, and their various interests can only be co-ordinated by some central body on which they are properly represented. With the powers now conferred upon them it should not be difficult for local authorities to set up such co-ordinated machinery for the carrying out of this all-important work, and so to safeguard the oncoming generations during their years of greatest peril.

Australia.

THE AUSTRALIAN INSTITUTE OF TROPICAL MEDICINE.

THE half-yearly report of the Australian Institute of Tropical Medicine, Townsville, Queensland, from July 1st to December 31st, 1915, has recently been printed. The work has comprised research investigations into problems connected with tropical disease, tropical hygiene and sanitation, and clinical work in connexion with the tropical ward of the Townsville Hospital. A list of the diseases treated in that institution shows that tropical maladies are by no means rare in Queensland—for example, there were 34 cases of malaria, 64 of dengue, 8 of ankylostomiasis, 8 of filariasis, 6 of dysentery, and 2 of sprue. There are also interesting observations dealing with helminthology, Dr. Nicoll having contributed papers on the trematode parasites of North Queensland, and on worm nodules in calves. The entomologist also has made a detailed study of some of the insects found in those parts, and has been occupied in transferring the collection of Australian diptera to a new insect cabinet. The collection now contains the representatives of many families, and should be of great use to students of entomology in Australia.

Correspondence.

VENEREAL DISEASES IN THE ARMY.

SIR,—Mr. E. B. Turner refers, in the SUPPLEMENT of November 4th (p. 125), to the "enormous amount of venereal disease in the army, at the front and at home," and states that "when the war was over there might be such a spread of disease as to cause a material degeneration among the general population." Equally grave charges have been brought against the soldier recently by Mr. Walter Long and Sir Malcolm Morris. Would it be possible to have the facts and figures on which these statements are based? My experience in extensive civil practice and in a large military hospital, as well as in a populous recruiting area, fails to confirm them.

A medical officer of high rank recently home from the front tells me that there is singularly little venereal disease at the front. I ask every medical man I meet if he finds any increase in venereal disease since the war began, and the answer is constantly in the negative. It wound be unfortunate if the present agitation, which is rapidly making venereal disease the subject of constant discussion in the lay press, should prove to have no better foundation than that of the "war baby." In my experience the British soldier is no less mindful of his health and his morals than his civilian brother.—I am, etc.,

Leeds, Nov. 7th. A. G. BARRS, M.D., F.R.C.P.

CONTROL OF VENEREAL DISEASES.

SIR,—As it appears evident that steps are to be taken at once by the county councils to provide for the diagnosis and treatment of cases of venereal diseases, it seems a fitting occasion to draw the attention of the profession to the necessity of seeing that those members of the profession who are at present on military service either at home or abroad should have the opportunity of undertaking some of the work entailed, and failing this possibility, that temporary officers only should be employed until the end of the war.

It appears that the authorities at Portsmouth are about to have the necessary work carried out on the above-mentioned lines, and it would be well if this course were followed by all county councils.—I am, etc.,

Cambridge, Nov. 4th. S. W. CURL, Captain R.A.M.C.(T.).

THE POSSIBLE FUNCTIONS OF THE CEREBRO-SPINAL FLUID.

SIR,—The importance of this subject from the standpoint of intrathecal treatment is, I trust, sufficient excuse for my venturing to criticize the views of so eminent a physiologist as Professor Halliburton. I find it difficult to accept his conclusion that the cerebro-spinal fluid constitutes the lymph of the central nervous system (p. 609).

As I understand Professor Halliburton, this fluid may be regarded as normal saline solution *plus* minute quantities of sugar and a peculiar protein—a type of fluid which, if duly oxygenated and perfused through the excised mammalian heart, allows it to continue beating for a considerable time, and is thus presumably all-sufficient for the nutrition of the central neurons. The cerebro-spinal fluid is secreted by the choroidal glands, and (so it is maintained) after passing into the subarachnoid space, drains off into the venous sinuses, along certain of the cranial nerves, and possibly (this a conjecture only) by the capillaries of the central nervous system.

The view that the cerebro-spinal fluid constitutes the lymph of the central nervous system was put forward some years ago by Mott, one of his arguments being that the interneuronal lymph, as studied in specimens of the brain and spinal cord under the microscope, does not appear to contain any coagulable lymph.

Now, although it is certain that the cerebro-spinal fluid does actually reach the perineuronal spaces (via perivascular channels), there are, it seems to me, weighty arguments against regarding it as true perineuronal lymph.

This view supposes that the entire nutriment of the central nervous system is provided by the comparatively small quantity of blood brought to the choroidal glands, a supposition which appears all the more unlikely when it is reflected that a goodly proportion of the cerebro-spinal

fluid admittedly does not enter the nervous system at all, but drains off in other directions.

Even supposing the choroidal glands to be capable of yielding the needful supply of nutriment, how is this to be conveyed in sufficient quantities to the neurons? We should have to postulate a rapid, vigorous flow from the subarachnoid space into the perineuronal spaces, and a rapid draining off of the fluid by the local capillaries (a mode of exit which Professor Halliburton barely admits even). Have we evidence of any mechanism capable of bringing about such a flow? On the contrary, the facts advanced by the professor are in favour rather of a sluggish flow of the fluid into the central nervous system. He gives definite evidence that in the case of the spinal cord this flow cannot be other than sluggish, seeing that such readily diffusible substances as adrenalin and atropine, when introduced into the spinal subarachoid space, take a long time to reach the blood stream; and he himself suggests that their rapid entrance into the blood, when the injection is made into the subcerebellar space, is not by the capillaries of the central nervous system but by the venous sinuses. Evidently Professor Halliburton regards the cerebro-spinal fluid which reaches the perineuronal spaces as all but stagnant. How under such conditions would it be possible for the neurons to receive an adequate supply of nutriment?

Professor Halliburton is silent as to the purpose served by the enormous blood supply to the central nervous system, other than the fractional portion sent to the choroidal glands. Presumably he regards it as essentially respiratory.

I confess that to me it appears more probable that the perineuronal lymph is derived not only from the cerebro-spinal fluid, but (mainly indeed) by exudation from the local capillaries. Professor Halliburton regards this as improbable on the ground that capillaries which allow the passage of foodstuffs would be likely also to permit the escape of substances (for example, arsenical salts) injurious to the neurons, whereas they are known to be impermeable, for the most part, to such substances. May we not, however, postulate an electivity on the part of the capillaries of the central nervous system, one which, while allowing the escape of substances favourable to the activities of the neurons, would tend to intercept such as are likely to injure these delicate structures?—I am, etc.,

London, W., Nov. 5th. HARRY CAMPBELL.

SIR,—Referring to Professor Halliburton's most interesting address on the possible functions of the cerebro-spinal fluid, I notice that he found that the sheath of the olfactory nerves in particular afford a communication between the cerebro-spinal canal and an external portion of the body (the nasopharyngeal membrane). He does not, however, offer any explanation of this condition of affairs; whereas it strikes me as a particularly interesting discovery in view of the embryological history of the nerves in question. Unless I am mistaken, the olfactory nerves develop in quite a different fashion to almost any other, and are histologically unique also. They are supposed to be no true nerves at all, but rather prolongations of the central nervous system, being, strictly speaking, part of the rhinencephalon itself. At one period of our development the sense of smell, as in many of the lower animals, was evidently of very great, if not of paramount, importance, as is shown by the extreme complexity of the portion of the brain to which the fibres from these nerves run, known collectively as the limbic lobe; and I would suggest that it is not improbable that the vestigial character of this portion of the system conduces, as in so many other vestiges (for example, the appendix), to inflammatory disturbance of any description.

The histological anatomy of the olfactory nerves bears out these remarks; composed of non-medullated fibres (the only sensory nerves connected with the central nervous system of this description), I believe they finally terminate by actual continuity with the olfactory cells in the epithelium of the nasopharynx.

Professor Halliburton's discovery goes far to confirm the above embryological theory, which I believe was first propounded by Keith, and shows that a third ally, in the shape of the embryologist, may well be added to the *rapprochement* he desires between the physiologist and the practitioner.—I am, etc.,

York, Nov. 6th. J. C. LYTH.

NITROUS OXIDE-OXYGEN ANAESTHESIA.

SIR,—I should like through you to thank the gentlemen who so kindly entered into the discussion of my case reported in your issue of August 26th last. I waited to see if more letters would reach you, but as this has not happened, now venture to reply.

I do not in the least attribute a carping spirit to Mr. Edmund G. Boyle. Like him I wish to learn, and I quite appreciate the spirit in which he penned his questions. Let me first answer these categorically.

(*a*) Sentiment and the patient's own expressed wish to have something to make her sleep made me give the nitrous oxide and oxygen as well as stovaine. I agree with Mr. Page that the Trendelenburg position is not an ideal one for comfort.

(*b*) I have no experience of the Gwathmey apparatus in practice, but have followed Gatch's method. This is quoted in Gwathmey's book, and from him I gather that it does not matter about the exact percentage; the pink colour of the patient should be one's guide to mixing the gases. By changing "about every five minutes," I mean that I empty my bag completely in this period through the expiratory valve, and then start a fresh mixture. I allow a very small jet of nitrous oxide gas to run in constantly, the patient rebreathing, and from time to time, according to the respirations and colour, add oxygen. If the CO_2 content in the blood becomes too high the breathing becomes violent, and at once subsides on the addition of oxygen (see Dr. Pembrey's letter, BRITISH MEDICAL JOURNAL, September 16th).

(*c*) I mean breathing deeply as in profound sleep, with blowing out of cheeks and a suspicion of a snore—certainly not stertorous breathing. This type of breathing, and a pink colour, would to me mean a perfect condition of deep anaesthesia, and was the state I attempted to describe.

(*d*) The second attack of vomiting could not have been due to rebreathing, as so little time had elapsed (ten minutes). I agree with Mr. Boyle that rebreathing may cause it, and it is not easy to tell when this is going to happen. I can recall many two-hour anaesthesias in which no vomiting occurred, and others in which vomiting was a trouble more than once during an operation of but one hour's duration.

I regret that Sir James Barr should feel it his duty to write so adversely of the use of nitrous oxide and oxygen, but am glad that his criticisms are met by so eminent a physiologist as Dr. M. S. Pembrey. From practical experience I have learnt that oxygen steadies the laboured and hurried respirations due to too much CO_2 in the blood, and, further, that it is this hurried respiration which ends in apnoea. It is not the oxygen, but the over-stimulation of the respiratory centre by CO_2, which is the cause of the apnoea. In this connexion Dr. Pembrey calls attention to the use of morphine and its allies by anaesthetists. For many years I was in the habit of using morphine prior to administering an anaesthetic. For the last four years I have discontinued its use and feel sure that a patient is far better without it owing to its deadening effect upon the respiratory centre.

Mr. Page is inclined to attribute death in my case to the stovaine and not to the nitrous oxide and oxygen. His experience of spinal anaesthesias is larger than mine, and from him I am glad to learn one point of which I was quite ignorant—namely, that in spite of a successful spinal anaesthesia, shock may still be produced by forcibly pulling on the uterus. But my experience of stovaine is that toxic symptoms appear in fifteen minutes with the utmost regularity. In his description of his methods, however, I am disappointed, just as I was in reading Gwathmey. Put shortly, I read both to say that in any suspect case ether should be used with the nitrous oxide and oxygen. But the point I would urge in my case is that, beyond being nervous and fat, there was no reason to suspect any heart trouble.

In reviewing my case, I cannot but repeat that the combination of the two anaesthetics—the stovaine and the nitrous oxide-oxygen sequence—was the cause of death; one would not have been fatal alone. It was on this account that I called attention to the fatality, and am richly rewarded by the discussion that has ensued.—I am, etc.,

London, W., Oct. 30th. W. E. ROBINSON.

Universities and Colleges.

UNIVERSITY OF LONDON.

MEETING OF THE SENATE.

A MEETING of the Senate was held on October 18th.

Sir Bertrand E. Dawson, K.C.V.O., C.B., has been elected Dean of the Faculty of Medicine.

The second examination for medical degrees, Part II, for internal and external students will commence on December 4th.

UNIVERSITY OF WALES.

THE Swansea Technical College Committee has adopted resolutions providing that, under suitable conditions, the Swansea Local Education Authority should levy a rate up to a maximum of one penny in the pound in aid of the Welsh University. One of the conditions was that, while safeguarding the authority of the University, the Treasury should make an increased contribution at least equal to the rateable contribution of the local education authorities in Wales and Monmouthshire from time to time.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

THE annual report of the Council for 1916 contains the list of names of Fellows and Members who are known to have been killed in action, or to have lost their lives from wounds or diseases contracted while on active service with His Majesty's forces, an analysis of which was published in the JOURNAL of October 21st, p. 576. It is proposed to compile at the end of the war a complete list of these names with short biographies, and Fellows and Members are invited to assist in making this catalogue as correct as possible. The report includes an abstract of the proceedings of the Annual Meeting of Fellows and Members in 1915, the usual official documents concerning Finance, the Annual Elections, the Museum, and the Library. The Jacksonian and Triennial prizes were not awarded, the Walker prize of £100 for the period 1911–1915 was bestowed upon Mr. W. Sampson Handley, F.R.C.S. Documents also included concern the Direct Representation of Members of the Council, the abuse of medical certificates, the prevention and treatment of venereal diseases, the motor licences for maimed persons, Poor Law medical officers' special fees, and the removal of Members. The President and Council have received from Mr. C. H. Golding-Bird a very complete annual report of the proceedings of the Central Midwives Board for the year 1915, which is published in full.

Obituary.

PROFESSOR JAMES JAMIESON, of Melbourne, who died recently at the age of 76, was born at Beith, near Glasgow. He studied at the University of Glasgow, graduating M.D. in 1862 and C.M. in the following year. Some years later he went to Australia and settled in Warrnambool where he practised for nearly ten years. In 1877 he migrated to Melbourne where he took the degree of M.D. in 1878. In 1879 he was appointed lecturer on obstetrics and diseases of women and children in the medical school. He held that post till the end of 1887 when he was elected to the chair of medicine. Two years before he had been appointed physician to the Alfred Hospital. In 1885 he was appointed health officer to the City of Melbourne, a position which he held for twenty-seven years. He resigned the chair of medicine in 1907 and retired from active professional life in 1912. In 1878 Dr. Neild resigned the position of editor of the *Australian Medical Journal* and was succeeded by Professor (now Sir Harry) Allen, who in turn gave place to Dr. Jamieson. The *Journal* was then a monthly publication, and Dr. Jamieson did not a little to establish its scientific reputation. As a health officer his activity brought about an extraordinary change in the hygienic condition of Melbourne. He was President of the Victoria Medical Society, since incorporated with the Victoria Branch of the British Medical Association. He was President of the Section of Medicine of the Australian Medical Congress which was held in Hobart in 1902. When "Wee Jimmie," as he was affectionately called, retired from his university and hospital work his students, past and present, showed their appreciation by founding a memorial in the form of an endowed scholarship in medicine.

PROFESSOR JOHN FERGUSON, who was for over forty years professor of chemistry in the University of Glasgow, died on November 2nd, after a short illness. He was well known to many succeeding generations of Glasgow medical students, and when he resigned his chair about a year ago the University Court recorded its high appreciation of the valuable services he had rendered to the university and to learning. He was much interested in the history of chemistry, and contributed many of the biographies of chemists in the *Encyclopaedia Britannica* and the *Dictionary of National Biography*.

DR. J. PICOT, sometime professor of clinical medicine in the University of Bordeaux, died on September 26th, aged 77. He was born in the department of Meurthe-et-Moselle, studied medicine at the old French University of Strasbourg, and in 1872 was appointed deputy professor in the Tours School of Medicine. While holding that post he wrote two volumes on clinical pathology (*Les grands processus morbides*) for which the Institute of France awarded him its Montyon prize in 1877. When the medical faculty of Bordeaux was founded in 1878 Picot was appointed professor of general pathology. A year later he succeeded Henri Gintrac in the chair of clinical medicine. He was very successful as a teacher and extremely popular with the students, who in their demonstrations used to cheer him under the affectionate nickname of "Père la Clinique." He was elected a corresponding member of the Institute in 1891, and in 1899 the distinction of the Legion of Honour was conferred on him. He was one of the founders of the *Gazette Hebdomadaire des Sciences médicales de Bordeaux*, in which he published a series of observations on diseases of the heart that attracted considerable attention.

PAUL VON BRUNS, professor of surgery in the University of Tübingen, who died recently, was the son of the famous Victor von Bruns, his predecessor in the chair, and was born on July 2nd, 1846. After serving in the war of 1870–71 he qualified as privatdozent at Tübingen in 1875. He was appointed extraordinary professor of surgery in 1877, becoming ordinary professor and director of the surgical clinic at Tübingen in 1882. He was president of the Deutsche Gesellschäft für Chirurgie in 1897. He was the author of writings on laryngotomy for the removal of growths in the larynx, gunshot wounds, the treatment of goitre, the radical operation for umbilical hernia, the treatment of fractures of the lower extremities, acute osteomyelitis, the temporary ligature of arteries, antiseptics in war, and many other subjects. In 1883 Bruns founded the *Beiträge zur klinischen Chirurgie*, which he edited up to the time of his death. He collaborated with Bergmann and Mikulicz in the *Handbuch der Chirurgie* and continued Bergmann's *Deutsche Chirurgie*.

DR. JOHN A. MCCORKLE, President of the Long Island College Hospital, Brooklyn, who died on August 15th, graduated at the University of Michigan in 1873, and after holding a resident post in the Long Island College Hospital, settled in Brooklyn. He was a member of the teaching staff of the hospital for forty years, and during a large part of that time he was professor of medicine and head of the department of medicine in the college. To his efforts was in great measure due the accumulation of the fund of £400,000 which now forms the endowment of the hospital and college.

COLONEL JAMES SUTHERLAND WILKINS, D.S.O., Bombay Medical Service (retired), died at Stayer House, Eye, on October 27th, aged 65. He was born on May 18th, 1851, took the diplomas of L.R.C.P.Lond. in 1873, and M.R.C.S. in 1874, and entered the I.M.S. as surgeon on March 31st, 1874. He became surgeon-major on March 31st, 1886, surgeon-lieutenant-colonel on March 31st, 1894, brigade surgeon-lieutenant-colonel on August 16th, 1897, and colonel on October 2nd, 1900, retiring on November 11th, 1905. He served in the second Afghan war in 1880, when he took part in the march from Quetta to the relief of Kandahar, receiving the medal; in Burma in 1886-87, when he was mentioned in dispatches, and gained the medal with two clasps, and the D.S.O.; and in South Africa in 1902, gaining the Queen's medal with three clasps. He also received the Kaisar-i-Hind medal, 1st class, on January 1st, 1901.

Surgeon-Major Robinson Boustead, Bombay Medical Service (retired), one of the few remaining veterans who served both in the Crimea and in the Mutiny, died at Hove on October 8th, aged 81. He was educated at Edinburgh University and took the M.R.C.S. in 1859, the L.S.A. in 1863, and the F.R.C.S.Edin. and M.D.St. Andrews in 1866. Entering the I.M.S. as assistant surgeon on July 23rd, 1858, he became surgeon on July 23rd, 1870, and surgeon-major on July 1st, 1873, retiring on February 5th, 1889. He had a fine record of war service. Before entering the I.M.S. he had served in the Crimea with the Turkish contingent, in medical charge of the Osmanli Irregular Cavalry, receiving the medal and the fifth class of the Order of the Medjidie. In the Indian Mutiny he served with the field force against the Rohillas, in the Central India campaign and pursuit of Tantia Topi, against the Bhils in Ahmadnagar district, and against mutineers on the Bhima-Krishna frontier, and gained the Mutiny medal with a clasp. He also served in the second China war of 1860; in the Abyssinian war of 1867–68, when he got the medal; and in the Eastern Soudan campaign in 1885, when he was present in the actions at Hashin, Tofrek, and Tamai, was twice mentioned in dispatches, and received the medal with a clasp and the Khedive's star. Surgeon-Major Boustead's death leaves only one survivor among the I.M.S. officers who served in the Crimea, Deputy Surgeon-General B. Williamson; but there are still about twenty-five I.M.S. officers living who were serving in India at the time of the Mutiny, nearly sixty years ago, and of these at least eight or ten took part in the campaign.

The Services.

EXCHANGES.

Captain R.A.M.C.(T.) in charge troops at a well-known golfing resort on the East Coast desires exchange with an officer doing hospital or recruiting duty in London or other large town.—Address No. 4450, British Medical Journal Office, 429, Strand, W.C.

Regimental Medical Officer attached to Camp, Eastern Command, Woolwich District, wishes to exchange with Medical Officer attached London Command (hospital preferred).—Address No. 4449, British Medical Journal Office, 429, Strand, W.C.

Medical News.

Sir Lauder Brunton left unsettled estate valued at £28,151, the net personalty being £26,457. Dr. W. W. Tate left estate valued at £26,414. Dr. Wharton Peter Hood left estate valued at £53,751.

The Act passed by the Michigan Legislature in 1913 permitting the sterilization of inmates of State institutions has been declared unconstitutional.

A paper on functional gastric disturbances in the soldier will be read by Colin McDowall, M.D., R.A.M.C. (temporary), at the quarterly meeting of the Medico-Psychological Association, to be held on Tuesday, November 21st, at 11, Chandos Street, Cavendish Square, W., at 2.45 p.m.

Dr. H. R. Kenwood, Professor of Hygiene and Public Health in the University of London and Lieutenant-Colonel R.A.M.C., will deliver a public lecture on hygiene—some lessons of the war, at University College, Gower Street, on Friday next, at 5.30 p.m. The chair will be taken by Sir Alfred Keogh, K.C.B., D.G.A.M.S. Those interested are invited to attend.

A course of lectures, to which members of the profession will be admitted on presentation of a visiting card, will be given by Dr. J. H. Sequeira on the early diagnosis and treatment of syphilis, at the skin department of the London Hospital, on Thursdays, November 23rd, 30th, and December 7th and 14th, at 11 a.m. Dr. J. McIntosh has arranged to give practical demonstrations of the examination for spirochaetes and of the Wassermann test.

The Council of the Edith Cavell Homes of Rest for Nurses (25, Victoria Street, London, S.W.) has received letters from Queen Alexandra and Lady Douglas Haig, strongly commending the project to provide homes of rest for nurses temporarily unable to carry on their duties owing to stress of work. Lady Haig says that officers who have benefited have expressed to her their desire that a channel might be provided through which both officers and those in the ranks could give practical expression to their gratitude according to their ability, and adds that the project to establish homes of rest for nurses affords to them an ideal opportunity for fulfilling their wish. Subscriptions may be sent to the honorary secretary at the address given.

The *Medical Record* states that, in accordance with the wishes of Mrs. Eddy, who in 1909 proposed that her followers should "establish and maintain a Christian Science resort for the so-called sick," the directors of the church have recently accepted a gift of twenty acres of land in Brookline, Mass., on which such buildings as may be necessary for the purpose will be erected.

At the annual meeting of the Japanese Red Cross, held recently at Tokyo, the young Empress was present, and there was a very large attendance. The society, which was formed in 1866, and was recognized by the Geneva Convention in 1877, has now a membership of about two millions and a capital of £4,000,000. It has twelve hospitals and two hospital ships. In co-operation with other Red Cross Societies, it has taken an active part in humanitarian work in the present war.

At the first meeting of the Chemical Society for this session a number of specimens of British-made synthetic chemicals were shown from the laboratory of Messrs. Boots and Co., Nottingham. They included chloralamide, chloramine-T, acetanilide, aspirin, paraldehyde, salol, adalin (bromdiethylacetylurea), phenacetin, hexamine, antipyrine, phthalic anhydride, and digitalin, all of them drugs made in Germany before the war. We are informed that these drugs are being manufactured in factories specially erected for the purpose at Nottingham since the outbreak of war.

The winter session of the Royal Society of Arts will be opened on Wednesday next, when Mr. Dugald Clerk, B.Sc., F.R.S., chairman of the council, will deliver an address at 4.30 p.m. on the stability of Great Britain. Among other lectures before Christmas is one by the Master of Magdalene College, Cambridge, on classical and scientific education, to be given on December 20th at 4 p.m. The Cantor lectures will be given during January and February by Professor A. Beresford Pite, F.R.I.B.A., on town planning and civic architecture.

A series of demonstrations has been arranged at the North-East London Post-Graduate College, Prince of Wales's Hospital, Tottenham, commencing on November 16th, when Dr. Murray Leslie will show selected medical cases. The other demonstrations arranged are: November 22nd, selected cases of children's diseases, by Dr. Whipham; November 28th, clinico-pathological methods in the diagnosis of disease, by Dr. G. G. Macdonald; December 7th, cases illustrating the treatment of (*a*) extensively splintered fractures, (*b*) consecutive osteomyelitis, by Mr. Howell Evans; and December 14th, screen demonstration of *x*-ray diagnosis of cardiac and pulmonary lesions, by Dr. J. Metcalfe. The demonstrations will be given at 3.30 on each day.

Dr. William Palmer Lucas, professor of paediatrics in the University of California, who was sent by the American Belgian Relief Commission to study health conditions in the conquered part of Belgium, has recently presented a report in which he states that the increase in the prevalence of tuberculosis seems to him to be mainly a result of lowered vitality due to underfeeding. Every sanatorium in Belgium is crowded, the waiting lists of all the institutions have increased, and the waiting cases are more acute. On the other hand, infant mortality has diminished and the health conditions of this class are better than normal, owing to its having been the object of great solicitude since the beginning of the war.

Mr. T. E. Wallis, B.Sc., has described to the Society of Public Analysts a method of quantitative microscopical examination for use in instances where chemical methods were inapplicable. Equal weights of the material under investigation and of a standard mixture for comparison, are separately mixed with similar weighed quantities of lycopodium spores. The mixed powders are suspended in a suitable fluid, and two slides are prepared from each suspension. Ten fields, selected according to a prearranged plan, are counted on each slide, and the average ratio of the number of particles of the substance to be determined to the number of lycopodium spores present is found, and reduced in each case, to the number corresponding to 100 lycopodium spores. The figures so obtained are proportional to the quantities of material present in the substance and in the standard mixture respectively. A simple calculation gives the quantity sought. The accuracy and utility of the method was shown by experiments with typical mixtures, including wheat flour, potato starch, and mustard, each mixed with corn-flour, wheat flour containing potato starch, white pepper adulterated with ginger and with rice starch, and gentian root with added cocoanut shell.

Letters, Notes, and Answers.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C., on receipt of proof.

THE telegraphic addresses of the BRITISH MEDICAL ASSOCIATION and JOURNAL are: (1) EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London;* telephone, 2631, Gerrard. (2) FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard. (3) MEDICAL SECRETARY, *Medisecra, Westrand, London;* telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

☞ *Queries, answers, and communications relating to subjects to which special departments of the* BRITISH MEDICAL JOURNAL *are devoted will be found under their respective headings.*

QUERIES.

INCOME TAX.

A RESIDENT medical officer in a sanatorium enquires whether he is entitled to deduct as expenses the amount spent by him on medical textbooks and current literature and necessary instruments; these are not supplied by the authorities of the institution.

*** Our correspondent does not state the precise constitution of the institution, but we assume that it is in the nature of a legal corporation, and that his appointment falls to be dealt with under Schedule E, and in accordance with the more stringent rules as to expenses which appertain to that schedule. Nevertheless, the expenses appear to be properly allowable, inasmuch as they may reasonably be regarded as "solely, exclusively, and necessarily" laid out in performance of the duties of the office. If the enquirer buys textbooks for the purpose of a special course of study or for improving as distinct from maintaining his standard of ability, there would be reasonable grounds for refusing allowance of such expenses, but it must surely be obvious that a certain amount of expenses is necessary in the circumstances mentioned by our correspondent.

CHRONIC GLOSSITIS.

COUNTRY PRACTITIONER asks for suggestions for the treatment of a case in which red raised patches have been present on the tongue for about a year. The patient has given up smoking, and the Wasserman reaction is negative.

LETTERS, NOTES, ETC.

ALCOHOL IN VENEREAL DISEASES.

DR. J. LEWIS THOMAS (Tuberculosis Physician, Newport, Mon.) writes: Is it not of the utmost importance that the general public should be told in no uncertain language that total abstinence from alcoholic drinks of all kinds is absolutely essential in the treatment of venereal diseases?

TREATMENT OF DYSENTERY.

DR. W. VERNER FURLONG (Dublin) states that he has found rectal injections of ipecacuanha useful in dysentery. He uses a liquid extract diluted with warm water and directs the patient to retain the injection as long as possible; for this purpose in some cases the addition of a small quantity of opium was found to be advantageous.

DR. JOHN PECHEY.

DR. GEORGE C. PEACHEY (London), who is compiling a biographical memory of John Pechey (1654–1718), the editor of the first English version of Sydenham, is desirous of obtaining a sight of the following of his works, which are absent from the medical libraries:

Promptuarium Praxeos Medicae, etc.: 1694; 1702 (cum aliis tract.); and 1718, Amst.; 1695, Lipsiae, 12mo.

The Whole Works of Sydenham, etc., fifth edition, 1710 or 1711, London, 8vo.

Collections of Acute Diseases, published separately in five parts, 1686–91; and together in one volume, 1691, London, 8vo.

THE LIFE-HISTORY OF THE MENINGOCOCCUS AND OTHER BACTERIA.

MR. JOHN WOOD (Crookes's Collosols, Limited) writes: With reference to Professor Adami's article on the above subject in your issue of October 14th, p. 525, and also to the interesting letter of Dr. Gruner relating thereto in your issue of October 28th, p. 604, we venture to suggest that the ultra-microscope (an improved form of that generally employed) will eventually solve the mystery. If the "filterable virus" of Hort and Caulfield were subjected to ultra-filtration, we very much doubt if the filtrate would reproduce the infection. The question would then resolve itself into whether the minute phase of the organism exists in the colloidal condition itself (and this seems probable) or whether it is adsorbed to the colloidal protein of the serum. In the latter case they would indeed be minute, as the colloidal particles of normal serum are certainly not larger than 5 to 8 $\mu\mu$ ($\mu\mu$ = one-millionth of a millimetre). The number of particles in a drop of a perfect colloidal solution is not less than one million million (1,000,000,000,000); and on p. 586 of your issue of October 28th, Dr. Boys states that two drops of collosol argentum completely healed an ulcerated and inflamed cornea in twenty-four hours. We know that the colloidal silver is an oxygen carrier, and if one considers the number of "carriers" at work the result is not really surprising.

CIGARETTE SMOKING AND IRRITABLE HEART.

A. W. SINCLAIR, Surgeon-Colonel (R.) writes: I think we are greatly indebted to Dr. Philip G. Borrowman for drawing our attention to this subject, especially at this time; more especially the attention of medical boards should be drawn to this. Young men of the present day are seldom without the cigarette in their mouth from morning to night, the tobacco is coarse and the paper is worse; no wonder we find irritable heart very frequent nowadays. It will be found that many recruits are rejected on account of "irritable heart," and consequently many young fit men—fit for general service—are lost to the State, or relegated to Class C 3. Some legislative restrictions should be enacted to prohibit youths under a certain age smoking, and young men or lads over this age should be restricted in the quantity they smoke—this latter could be done by the commander of a unit, or, if thought necessary, by the G.O.C. In my younger days we were never allowed to smoke when we were training for sports, such as rowing, swimming, or racing and walking long distances. When intending to go shooting big game we never smoked for at least a fortnight before, and I have to record the sad death of one of my comrades through neglecting this rule. No one can enjoy a smoke more than myself, so that I am not running down smoking in a narrow or captious spirit; but cigarette smoking is carried out far too much at the present. In the BRITISH MEDICAL JOURNAL of November 22nd, 1884, will be found a few remarks of mine on cigarette smoking, and the benefit of the use of the under skin of the nepa-palm leaves over the use of paper, and especially cheap paper.

A CASE OF TETANUS.

DR. D. MCARTHUR (Bury St. Edmunds) writes: A girl aged 10 years sustained in a carriage accident a lacerated wound 4 in. long on the outer side of the left knee-joint. I saw the case half an hour afterwards and found the wound had been bathed with potassium permanganate by a nurse. I cleaned it thoroughly with hydrogen peroxide, inserted four silkworm-gut sutures, and applied double cyanide gauze, iodoform wool, and bandage, and placed the leg on an aluminium back splint to prevent possible jerking during sleep. Patient and wound did well until the fifth day, when symptoms of trismus set in at 6 a.m. I sent for Dr. Master of Bury St. Edmunds, asking him to bring antitetanic serum, which he did, and within two hours; the patient was anaesthetized, lumbar puncture performed, and the serum was injected through the cannula and also into the median basilic vein. The same evening 6,000 units were injected again, and the same dose next morning, the patient's strength being sustained by nutrient enemata; and morphine ¼ gr. was given subcutaneously from time to time to subdue restlessness. Twenty-four hours after the first injection the spasms were less violent, and the tonic contractions of the head, which had been very marked, relaxed; the patient drank water and asked for grapes; but death occurred during a spasm about thirty-six hours after the first injection. My experience of the treatment of tetanus is limited to three cases, all children, of whom two died within four days.

CARE OF THE EXPECTANT MOTHER.

THOSE interested in this question may like to know of a little book published in the year 1663, and entitled "A Present for Teeming Women, or Scriptural directions for Women with Child. How to prepare for the houre of Travel. Written first for the private use of a Gentlewoman of Quality in the West, and now published for the Common Good. By John Oliver less than the least of Saints." To those curious to know what advice was given to the "Gentlewoman of quality in the West" by the "less than the least of Saints," it may be stated that almost the entire book is of a religious or moral nature, and passed by a divine who finds nothing "factious" or "seditious" in it. Only one of its fourteen little chapters is devoted to the care of the health, which the author states would generally be regarded as too small a matter to require notice. He, however, counsels moderation in all things, and reminds his readers that the mother of Samson, when pregnant with that prodigy, abstained from alcoholic beverages.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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